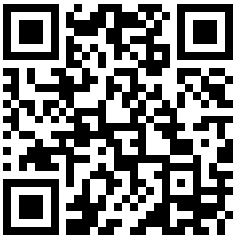
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ILLUSTRATED GUIDE

TO

MODERN

AGRICULTURAL IMPLEMENTS,

TOOLS,

MACHINERY, &c.

COMPILED BY

JAMES WOODWARD HILL, Assoc. M. Inst. C. E.

BIBLIOTH... FEB 80 BODLEIAN...

LONDON:

WHITTAKER & Co., AVE MARIA LANE.

1880.

176. h. 66.

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BEDFORD :
PRINTED BY ARTHUR A. JAKINS & CO., STEAM PRINTERS,
4 & 6, SILVER STREET.

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PREFACE.

IN this Guide Book important Machines and Implements have perhaps been unintentionally omitted, and others of inferior merit inserted; but allowance must be made for the difficulties attendant on so extensive a selection, which has been gathered at intervals from a vast number of Books, Catalogues, and Pamphlets, upon this and kindred subjects.

Every step has convinced the compiler, more and more, of the indefinite length to which the selection might be extended; but he trusts sufficient has been collected to justify the object and title of the present work.

BEDFORD,

December, 1879.

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The Prices are subject to the Fluctuations of the Market.

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ASPIRATORS.

COMBINED DOUBLE ASPIRATOR, SEPARATOR, & SMUTTER.

MANUFACTURED BY

J. ASHBY & SONS, Aswell Ironworks, Louth.

This Machine will clean and separate all kinds of Grain and Seed. The Scouring Apparatus will scour any kind of Grain or Seeds. Grain or Seed that does not require scouring, can be instantaneously passed through the Separator and double-exhaust without entering the Scouring Cylinder.

No.	Extreme Height.	Size on Floor.	Weight.	Speed of Main Shaft.	Diameter of Driving Pulley.	Average Bushels per hour.	Length and Diameter of Cylinder.	Price.
	ft. in.	ft. in. ft. in.	cwt.		inches.		ft. in. ft. in.	
1	8 0	8 3 by 3 6	30	550	14	100	4 2 by 2 6	£120
2	7 4	8 3 by 3 6	25	550	14	90	3 6 by 2 6	£100
3	6 4	7 2 by 2 8	20	700	12	60	2 10 by 2 0	£80

THROOP'S GRAIN CLEANING COMPANY,

Auburn, New York.

No. 2 Combined Double Wheat Aspirator, Separator, and Smut Machine with Scourer,

Price .....£55.

JAMES WALWORTH & COMPANY,

Bradford, Yorkshire.

Patent Aspirating Middlings' Purifier ... ... Price £90.

VAN GELDER'S PATENT GRAIN CLEANER AND SMUT MACHINE,

With Double Aspirator—Capacity, 50 to 60 Bushels per hour £68

MANUFACTURED BY

MESSRS. WALKER & PENDLETON, Liverpool.

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ANVILS.

		Warranted Best Best well tied in Bicks and Ends.	Second Best Ditto.	Common Bright Steel Face.	Common Iron Anvil Bright Face.
Smith's Anvils, ordinary shape	at per cwt.	27s. 0d.	25s. 0d.	23s. 6d.	20s. 6d.
,, ,, London ,, ...	,,	27s. 0d.	25s. 0d.	23s. 6d.	20s. 6d.
Double Arched Anvil	,,	27s. 0d.	25s. 0d.	23s. 6d.	20s. 6d.
Round Bick Farrier's Anvil	,,	27s. 0d.	25s. 0d.	23s. 6d.	20s. 6d.
Double Bick Anvil	,,	31s. 0d.	26s. 0d.	24s. 6d.	20s. 6d.
Boiler Maker's Anvil, best quality only	,,	29s. 6d.	———	———	———
Soho Anvil ,, ,, ,,	,,	29s. 6d.	———	———	———
Portable Anvil ,, ,, ,,	,,	33s. 6d.	———	———	———

BESSEMER STEEL ANVIL, made of Solid Steel, per cwt. ... ... 33s. 0d.

H. BESSEMER & Co., Sheffield.

		Common.	Best.	Warranted.
Best Black Staple Vices	per cwt.	37s. 4d.	40s. 0d.	44s. 6d.

Best Bright Ditto, ½d. per lb extra.

APPLE PARERS.

With Improved Turn Table ... ... 40s. per dozen.

SELIG. SONNENTHAL & Co.,

Lambeth Hill, Queen Victoria Street, London.

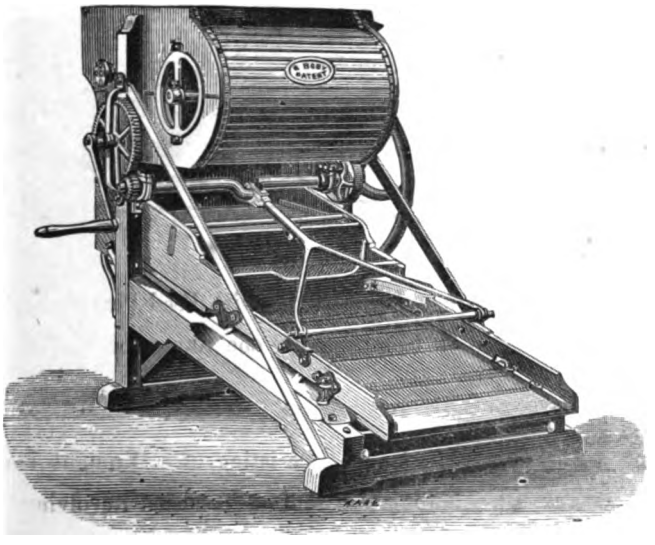
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BARLEY HUMMELLERS.



The Barrel is of iron fixed on a wrought spindle. One man can do 60 bushels per hour. The points or awms are very effectually removed... ... ...Price £5 0 0

BARLEY SCREENS.



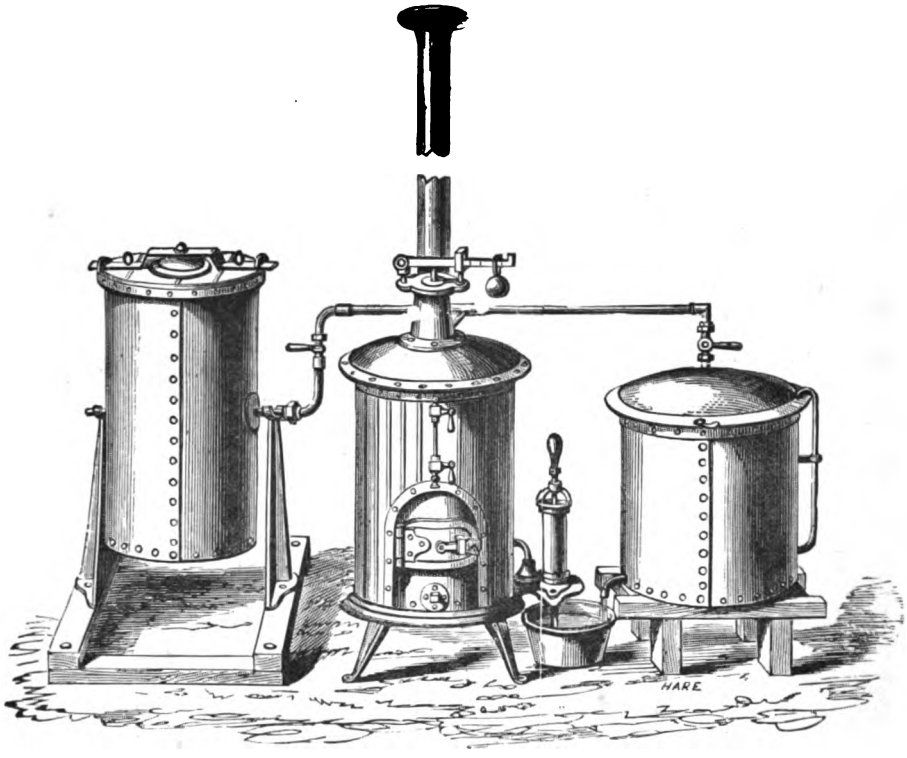
Self-Cleaning Corn Screens, with Blowers complete, with extra Separators for removing stones, with Lifting Handles, will Screen 60 bushels per hour,

		No. D.	£16 10s. 0d.
Ditto	Ditto	No. E. to screen 90 bushels per hour	£18 10s. 0d.
Ditto	Ditto	No. F. to screen 150 bushels per hour	£32 0s. 0d.

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BOILING AND STEAMING APPARATUS.

ADAPTED FOR PREPARING FOOD FOR CATTLE ON LARGE FARMS, OR FOR DOMESTIC USE IN UNIONS, GAOLS, HOSPITALS, AND OTHER LARGE BUILDINGS.



No. 2—Consisting of a one-horse Vertical Steam Boiler, with Feed Pump attached; one 12-bushel strong Galvanized Iron Pan, and one 100-gallon Boiling Pan..... £50 0 0

No. 3—Smaller than the above £40 0 0

No. 4—Self-contained, requiring no brickwork, consisting of a Wrought Iron Steam Generator, one 60-gallon Boiling Pan, and one 9-bushel Revolving Pan, with 12 feet of Iron Pipe £30 0 0

No. 5—As above, but with 40-gallon Pan and a 6-bushel Revolving Pan £23 10 0

No. 6—With Generator and two 40-gallon Compound Pans £25 10 0

No. 8—With Generator and one 40-gallon Compound Pan £18 10 0

No. 9—With Generator and one 6-bushel Pan £17 10 0

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BILL HOOKS, BEAN HOOKS, HAY AND STRAW BAND KNIVES,

Brushing and Switching Bills, with patent sockets... ...	from	31s. 6d.	to	67s.	per dozen.
Hedging Bills	from	20s. 0d.	to	50s.	per dozen.
Broom and Fence Hooks	from	18s. 0d.	to	36s.	per dozen.
Pea Hooks	from	18s. 0d.	to	36s.	per dozen.
Sickles and Bean Hooks	from	7s. 6d.	to	42s.	per dozen.
Hay and Straw Cutting Knives	from	42s. 0d.	to	145s.	per dozen.

BOLTS AND NUTS.

SQUARE HEADS AND NUTS.—ROUND NECKS.

Diameter.—Inches.	⅜	7/16	½	9/16	⅝	¾	⅞	1	1¼	Extras.
6¼ long and up, per cwt.	29/0	26,0	23/0	23/0	22/0	20/0	20/0	20/0	20/0	For Hex heads 1/0 per cwt.
4⅝ to 6 long ... ,,	31/0	28/0	26/0	26/0	24/0	24/0	22/0	22/0	22/0	For Hex nuts ⅜, 7/16, and ½, 4s. per cwt.
3⅛ to 4½ long ... ,,	33/0	31/0	28/0	28/0	26/0	24/0	24/0	24/0	24/0	
3 to 2 long ... ,,	per 8/0	gross 9/6	30/0	30/0	27/0	25/0	25/0	25/0	25/0	For Hex nuts ⅝ and upwards, 2/6 per cwt.
Under 2 long ... ,,	6/9	8/3	34/0	34/0	31/0	29/0	—	—	—	For Sq. Necks 2/6 per cwt.

The Heads, Threads, and Nuts are to Whitworth's Gauges. — The points turned and all finished in a superior manner.

In ordering it will be sufficient to give the length from under head to point and the diameter, with description of head, neck, and nut.

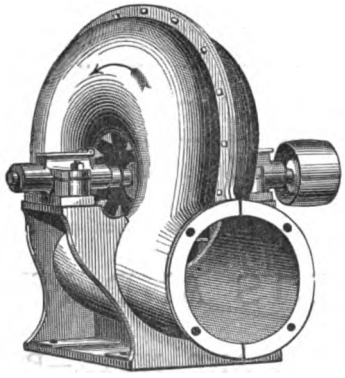
SQUARE HAND MADE NUTS.

Diam. of Hole.	Per Gross, Untapped.	Diam. of Hole.	Per Cwt., Untapped.
		½″	29/0
¼″	1/2	⅝″	28/0
5/16″	1/5	¾″	27/0
⅜″	2/3	⅞″	27/0
7/16″	2/11	1″	27/0

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BLOWING FANS AND BLOWERS.

GUNTHER'S IMPROVED SILENT FANS



Are guaranteed to work with less power than any other Fan hitherto brought out. They are manufactured with special regard to strong material (being fitted with steel spindles), good workmanship, long bearings, and efficient lubrication, and are offered to the public at a *much less cost than any other Fan.*

SIZES.	PRICES	Diameter of Revolving Fan.	Diameter of Discharge.	No. of Fires Blown.	Tons melted per Hour.	No. of Revolutions per Minute.	Diameter of Pulleys.	Breadth of Straps.
	£ s.	in.	in.				in.	in.
No. 1	4 0	10	5	4	—	4,000 to 4,500	2	1½
,, 1½	5 0	12	6	6	—	3,500 ,, 4,300	3	1¾
,, 2	6 0	15	8	8	1¼	3,000 ,, 4,000	4	2¼
,, 2½	8 0	17½	9	12	2	2,800 ,, 3,500	5	2½
,, 3	10 0	20	10	16	2½	2,500 ,, 3,300	6	3
,, 4	13 10	25	12	24	3½	2,000 ,, 2,500	8	3¼
,, 5	16 10	30	14	32	5	1,500 ,, 2,000	9	3½
,, 6	23 0	36	16	52	7½	1,300 ,, 1,700	10	4
,, 7	30 0	40	18	72	10	1,200 ,, 1,500	12	4½
,, 8	45 0	50	22	150	20	900 ,, 1,100	15	5

BAKERS' PATENT ROTARY PREMUE BLOWER AND ENGINE,

For exhausting, ventilating, drying, blowing—for hot or cold air, vapours, or gas ... £198 0 0

CYCLOP'S POWER FAN, with Patent Driving Gear.

Price £30 0 0

ROOT'S PATENT BLOWER, No. 2.,

Will melt 2½ tons of iron per hour, or blow 18 ordinary smiths' fires, with escape valve £42 5 0

ROOT'S PATENT BLOWER, No. 1A.,

Will melt ¾ ton of iron per hour or blow for 6 ordinary smiths' fires, with escape value £26 10 0

ROOT'S PATENT BLOWER, No. 2A.,

Will melt ½ ton of iron per hour, or blow 4 ordinary smiths' fires, with escape valve ... £20 15 0

ROOT'S PATENT SMALL BLOWER, No. 1,

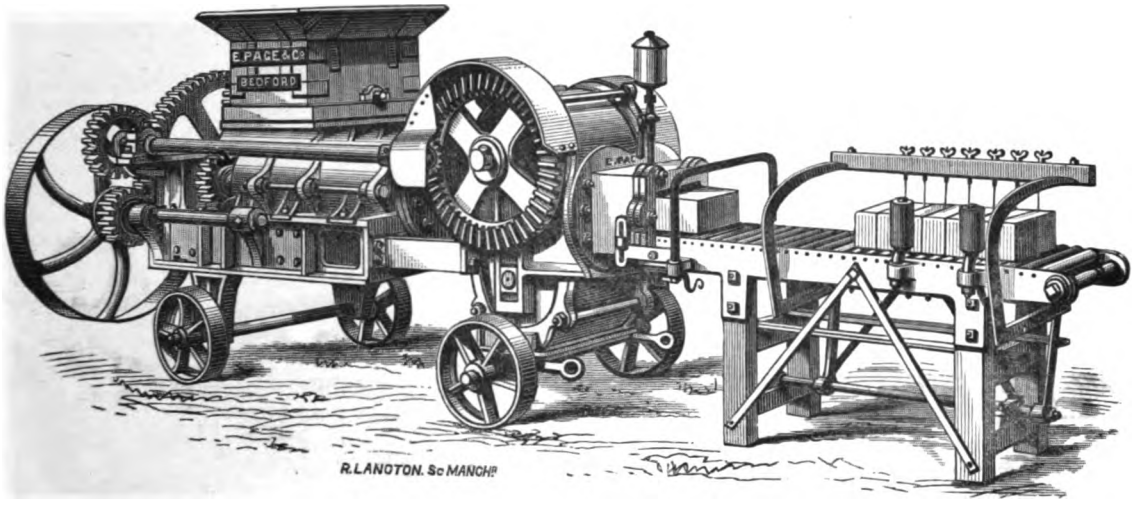
Suitable for small fire £5 0 0

PRICES OF OTHER FANS AND BLOWERS CAN BE OBTAINED ON APPLICATION TO

E. PAGE & Co., Victoria Iron Works, Bedford.

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NEW CONTINUOUS-FEED BRICK, PIPE, AND TILE MAKING MACHINE.



This Machine, as illustrated, pugs the clay and makes the Bricks, or other goods, at one operation, and dispenses entirely with a separate Pug Mill.

The Machine is portable and very handy to move about, being fitted with lock to the front wheels. It can be set to work anywhere in a very short time without skilled labour.

It will make Solid, Perforated, Hollow, or Tubular Bricks, Roofing Tiles of all descriptions, Paving Bricks, and Drain Pipes.

The Pugging Knives are of malleable iron, and can be adjusted to any distance required.

The Machine is made to open entirely by simply removing a few bolts, so that the interior of the Mill can be got at in a few minutes without difficulty.

Ten thousand first-class Bricks can be made in ten hours.

Power, Four to Six H.P. nominal.

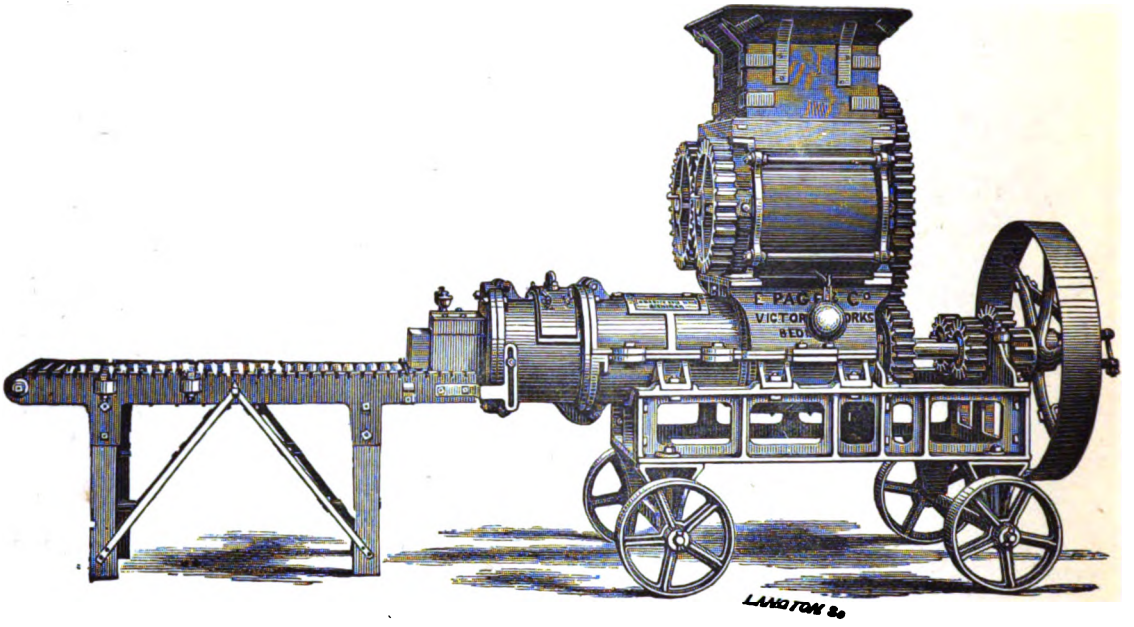
Price of Machine, complete as shewn	£90	0	0
If with Murray's Patent Stage	£112	0	0
If Mounted with a Pair of Crushing Rollers, extra	£25	0	0

E. PAGE & Co., Victoria Iron Works, Bedford,

Sole Manufacturers and Patentees.

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NEW HORIZONTAL PUGGING AND CRUSHING MILL.



The above Mill is excellent as a Pugging and Crushing Mill ; the Crushing part can be added or removed without affecting the Pug Mill in any way.

Price of Horizontal Pug Mill only £60 0 0

Price of Pug Mill and Crushing Rollers £85 0 0

The clay is thoroughly well mixed and pugged and the grinding is also very effectually performed.

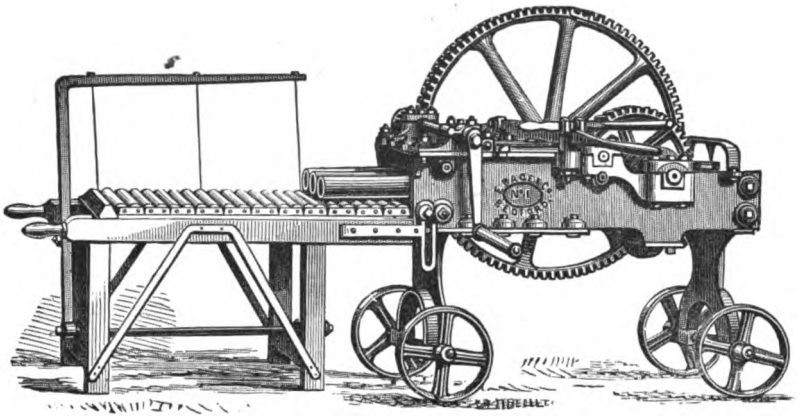
DELIVERED FREE AT BEDFORD STATION.

E. PAGE & Co., Victoria Iron Works, Bedford,

Sole Manufacturers and Patentees.

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DRAINING PIPE, TILE, AND BRICKMAKING MACHINES.



No. 1. Pipe and Tile Making Machine.

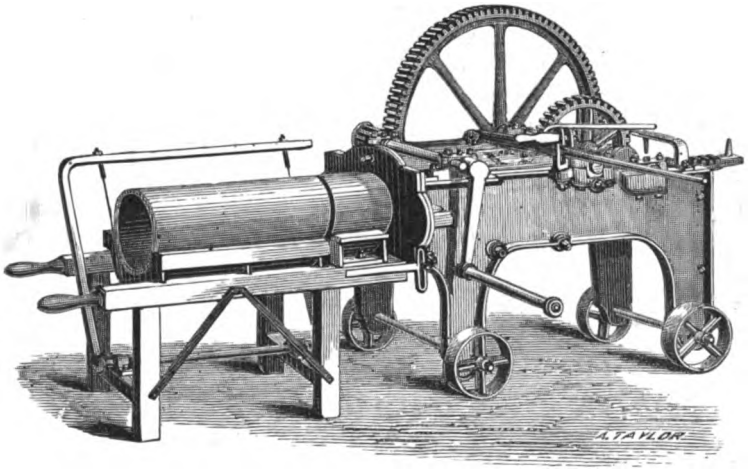
This Machine is specially adapted for the use of small Tileries, or for Private Gentlemen manufacturing Pipes, &c., on their Estates, being portable, simple in construction, and easily worked by a strong boy.

It will make Drain Pipes of any pattern from 1½in. to 6in. internal diameter, Plain and Roofing Tiles, &c., and will produce upon an average 4,500 2in. Pipes per day.

Price, including Screen, Stage, and Cutting-off Apparatus (exclusive of Dies) ... £14 14 0

IMPROVED HORIZONTAL SINGLE-CHAMBER PIPE AND TILE MACHINE,

FOR HAND POWER.



No. 2. Pipe and Tile Machine.

This Machine is fitted in a similar manner to the No. 1, but with larger Mouthpiece, and is especially adapted to make Pipes from 1½in to 10in. diameter, Tiles of every description, and Perforated and Tubular Bricks. Can be worked easily by a strong lad.

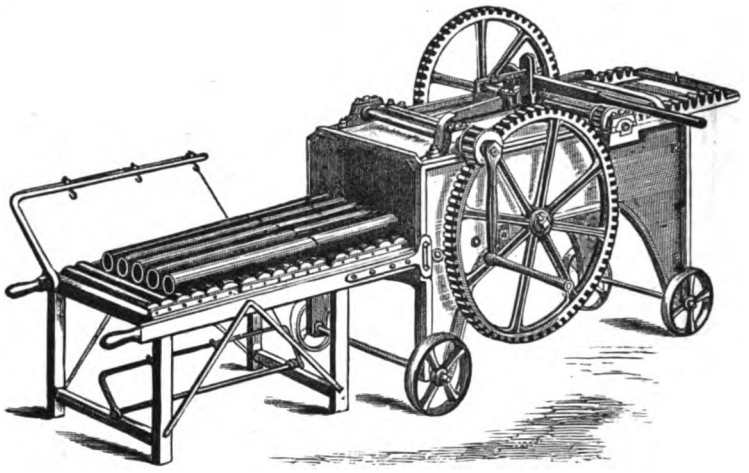
Price, including Screen, Stage, and Cutting-off Apparatus (exclusive of Dies) ... £16 16 0

Manufactured by E. PAGE & Co. (late Williams),

Victoria Iron Works, Bedford, England.

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WILLIAMS' PATENT PIPE AND TILE MACHINE, NO. 3.



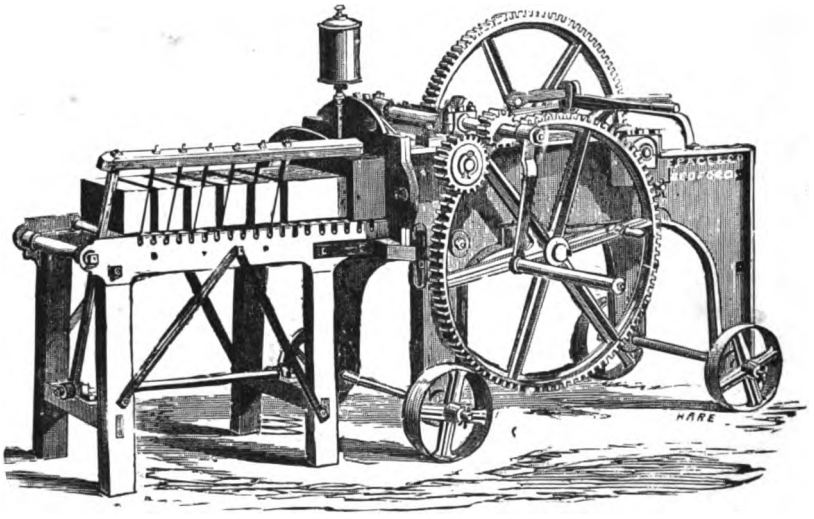
This Machine is fitted with double racks and pinions, and is a large and powerful machine. It will make Pipes up to 7″ diameter when green, and Roofing Tiles, Tubular, Solid, or Ornamental Bricks and Hollow Goods of all descriptions. It is easily worked by a man or a stout lad.

Price of Machine, Screen, Stage, and Cutting-off Apparatus, but exclusive of Dies, £21 0 0

BRICK, DRAINING AND SEWER PIPE, AND TILE MACHINE,

No. 4, for Hand Power.

Awarded the Head Prize at the Highland & Agricultural Society's Meeting at Edinburgh, 1859, and the First at Dumfries, 1860.



The Machine illustrated above is easily worked by the power of one man, and is capable of producing all kinds of Drain Tiles, Pipes, Tubular, Perforated, or other Bricks, Pan, Plain, or Corrugated Tiles, and will make round pipes up to 12 inches in diameter.—Green.

The Machine is constructed with Double Racks and Pinions, so as to reduce the strain as much as possible. The Plunger Plate and other fittings are made of wrought-iron where required for strength, and it is mounted upon four travelling wheels for convenienee of moving.

Price with one screen, stage, and cutting off apparatus, but exclusive of dies £25 0 0

E. PAGE & Co., Victoria Iron Works, Bedford,

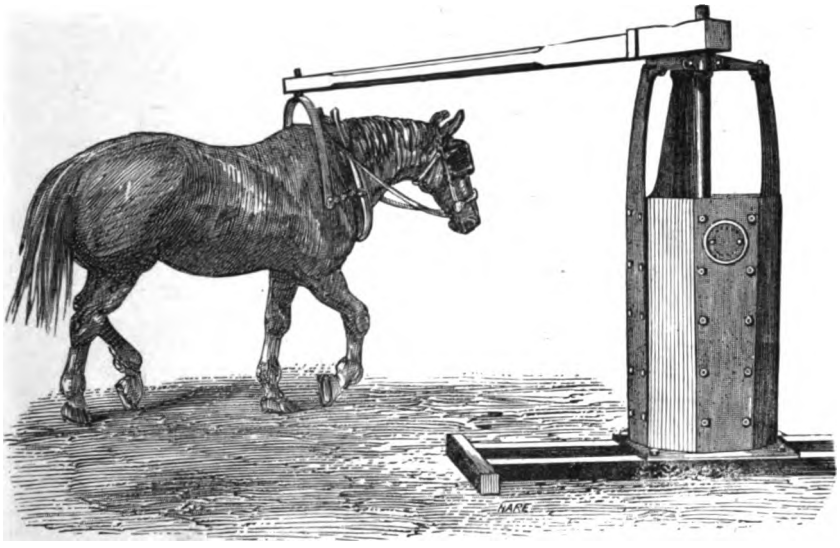
Sole Manufacturers and Patentees.

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IMPROVED PUGGING MILLS.

Clay of almost every description requires pugging before it can be used for the manufacture of goods of any kind, and a Pug Mill is one of the most useful and indispensable Machines in any Brick and Tile Yard, as it is essential that all the clay should be brought into a thoroughly homogeneous and uniform consistency.

The Patent Sectional Octagon Pug Mill is admirably adapted for this purpose, and is most specially suitable for shipment abroad, as it can be taken to pieces and packed in an unusually small compass.



These Pug Mills are composed of sectional plates and they are erected on large base plates of cast iron.

The clay can be discharged either under or at the side of the Mill.

The knives are fixed upon the Archimedian principle, which not only cut the clay but also turn it over.

No. 1, Diameter 25″, height of ditto 3′ 6″, total height 6′ 3″,
Price, with draught pole and yoke for one horse... ... ... £14 14 0

No. 2, Diameter 30″, height 3′ 7″, total height 6′ 3″
Price, with draught pole and yoke for one horse £18 0 0

E. PAGE & Co., Victoria Iron Works, Bedford,

Manufacturers and Patentees.

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IMPROVED CLAY AND CHALK WASHING MILLS.

TO WORK BY STEAM OR ANIMAL POWER.

Washing must be resorted to for the *effectual separation of Limestones and other impurities from Earths*, into which they dangerously intrude, or for those classes of Bricks (as the London "Stock") with which Chalk is largely mingled with the Clay.

For such purposes these Improved Roller and Harrow Wash Mills are far superior to those in ordinary use—they are separately applicable as Chalk Mills; or, where the special manufacture required renders the Washing of the Clay, or the total amalgamation of the raw material desirable, they can be used both as Clay and Chalk Washing Mills.

The Mills are constructed of various sizes according to requirement.

The whole of the necessary Ironwork and fittings for these Mills is provided ready fitted; the race (formed of brickwork) and the timbering being prepared by the purchaser from plans supplied.

Pumps for supplying the Wash Mill can be arranged in conjunction when required.

Diameter of Race.	Power required.	Will Work Clay sufficient for—	Total Weight.
10 ft. race.	2 H. P. Engine.	10,000 Bricks.	1½ ton.
12 „	3 „ „	12,000 „	2 „
15 „	4 „ „	15,000 „	2¼ „
20 „	6 „ „	20,000 „	2¾ „

COMBINED MORTAR MILL, ENGINE, AND BOILER.

This Mill is combined with a Vertical Engine and Boiler of sufficient power to drive it when grinding Lime, Brick Ends, Slag, Iron Ore, &c., and will be found of great advantage where belts would be objectionable.

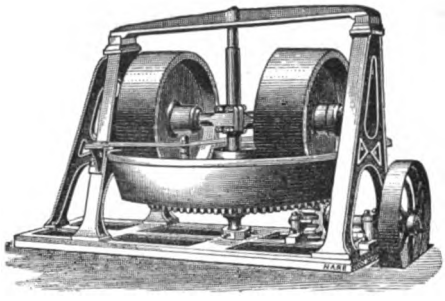
Price of Combined Engine, Vertical Boiler and 5ft. Pan Mill on 4 Travelling Wheels with Carriage Work	£225	0	0
„ „ „ „ „ with 6ft. Pan Mill „ „ „	£250	0	0
„ „ „ „ „ with 7ft. „ on wood foundation frame and 6 Truck Wheels	£300	0	0
„ „ „ „ „ with 8ft. Pan Mill „ „ „	£345	0	0
„ „ „ „ „ with 9ft. Pan Mill „ „ „	£385	0	0
Price of 5ft. Pan Mill and Vertical Engine without Boiler	£140	0	0
„ 6ft. „ „ „ „ „	£155	0	0
„ 7ft. „ „ „ „ „	£185	0	0
„ 8ft. „ „ „ „ „	£220	0	0
„ 9ft. „ „ „ „ „	£245	0	0

☞ The 9ft. Mill in the Combined Machine has four turned rollers and carriages complete, on which the pan is supported as it turns round; pan of extra weight and turned underneath for friction rollers; rollers, 28cwt. each, and can be increased to 40cwt. each at an extra cost. This Mill will grind about three cubic yards of mortar per hour.

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IMPROVED VERTICAL EDGE RUNNERS,

WITH PERFORATED PAN FOR PULVERIZING, OR WITH SOLID PAN FOR WET GRINDING, WITH EITHER UNDER OR OVERHEAD GEAR.



With Pan 6 feet diameter, Rollers 3 feet diameter, 12 inch face with Bed Plate for wet grinding—total weight about 6 tons £115 0 0

With Pan 6 feet diameter, and Perforated Pan—total weight about 5 tons £115 0 0

IMPROVED MORTAR MILLS.

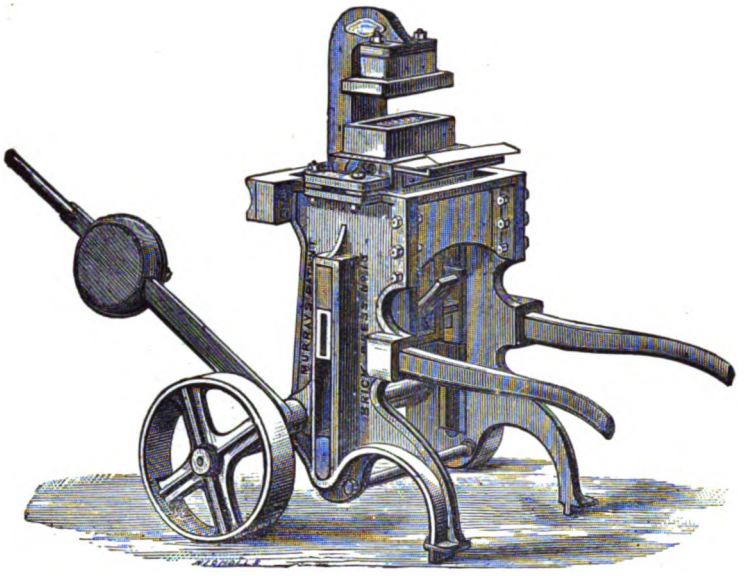
Improved Mortar Mills, very strong, exceedingly simple, fitted with Box Bed Plates, Revolving Pans, False Bottoms, and every necessary appliance to make them complete. Very serviceable to Grind Old Brickbats, Slag, Iron Ore, &c.

PARTICULARS AND PRICES.

Diameter of Pan at top.		Size of Rollers.			Weight of each Roller.	Size of Pulley.		Speed of Pulley.	Speed of Pan.	Price.	Extra Cost of Wood Foundation Frame		
ft.	in.	ft.	in.	in.	cwts.	ft.	in.			£	£	s.	d.
5	0	2	8	by 10	10	2	0	134	25	50	2	10	0
6	0	2	8	,, 12	12	2	6	122	23	60	3	0	0
7	0	3	6	,, 15	19½	3	0	108	17	75	4	10	0
7	6	3	6	,, 15	22	3	0	100	16	85	5	10	0
8	0	3	6	,, 18	24	3	6	90	15	110	8	0	0
9	0	3	6	,, 20	28	3	6	84	14	130	8	15	0

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MURRAY'S PATENT BRICK PRESS.



This Machine will Press from 4,000 to 5,000 Bricks per day of 10 hours, when worked by a man and two boys. It is fitted with Self-lubricating Boxes... ... ... £30 0 0

Bricks or Tiles up to 10 *inches square can be pressed to any thickness.*

PINFOLD'S IMPROVED GENERAL PURPOSE BRICK AND QUARRY PRESS.

The adaptability of this Press for Pressing all kinds of Goods makes it very useful for general purposes. It is capable of pressing any size up to 12 inches square, and from ½ an inch to 5ins. thick.

Price, with Plain Die £16

Ditto, with Self-Lubricating Dies £18

FLOORING, QUARRY, AND OTHER PRESS DIES,

Complete from £2 upwards, according to Size.

PINFOLD'S IMPROVED DOUBLE-BOX BRICK PRESS,

FOR HAND POWER.

This Machine needs but little description ; the Boxes and Pistons are so arranged that, while one Brick is being pressed, the other Box is being emptied and re-filled, thereby enabling the Machine to readily press from 5,000 to 6,000 per day.

Price £24

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CLAY ROLLING MILL,

CARLTON ARRANGEMENT.

This Mill is fitted with a pair of Clay Rollers 24 inches diameter, 36 inches long, and 2 Driving Pulleys or a Pair of Wheels as preferred; 2 strong adjustable bearings fitted with Blocks and Set Screws, wrought Driving Shaft 4 feet long, 2 wrought iron Scrapers, and 2 Pedestals with Gun-metal Bearings £35 0 0

Power required, 6 H.P.

NO. 1 CLAY CRUSHING & GRINDING MILL,

SUITABLE FOR PREPARING CLAYS FOR LARGE MACHINES.

This Mill is fitted with Rollers 2 ft. 6 in. long by 2 ft. 6 in. diameter, weighing from 32 cwt. to 2 tons, turned quite true, and hung upon very strong wrought iron Shafts. These work in Bearings that rest in massive wrought-iron Carriages, which are fitted with Adjusting Pins and Safety Bolts, to prevent accidents. They are driven by correspondingly Strong Wheels and Shafts, with suitable Driving Pulley. £85 0 0

No. 2. GRINDING MILL.

Has Rolls 2 ft. 6 in. long by 2 ft. diameter, in all other respects it is the same as No. 1, previously described £60 0 0

These Rolls are found to be capable of Grinding sufficient Plastic Clay for 40,000 Bricks per day.

No. 3. GRINDING MILL.

With Rolls 2 ft. long by 2 ft. diameter, and all necessary Machinery suitable for working by Horse-power £28 0 0

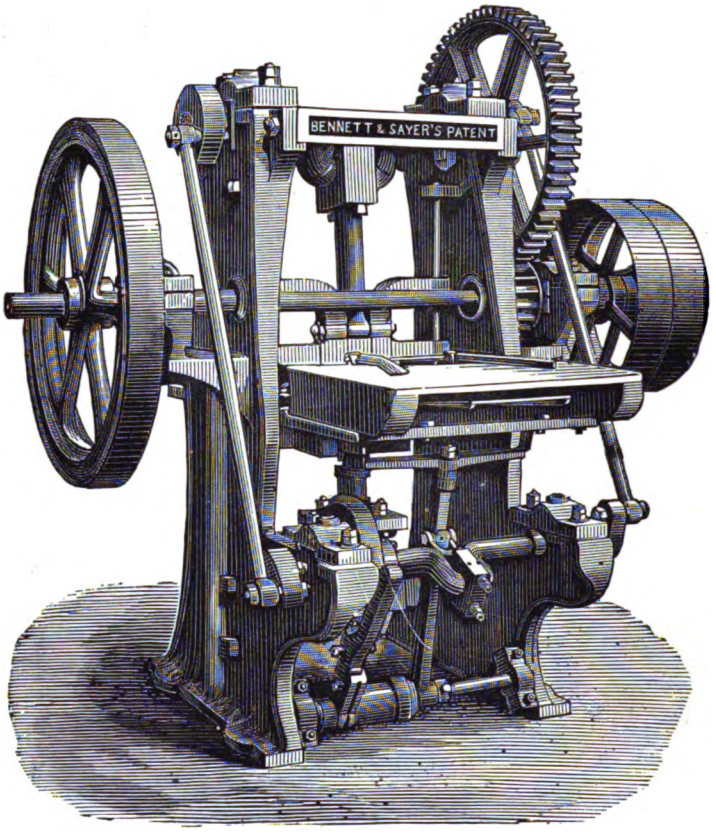
Extra if the Rolls are turned.

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BENNETT & SAYER'S

PATENT SELF-FEEDING AND DELIVERING BRICK PRESS.

This Machine is entirely self-contained, requires little fixing, has extra broad bearing surface in all wearing parts and can be driven from either side of the Press by Counter Shaft, as shown on Illustration.



It is also very strong, combined with the best materials and workmanship, and is easy of access to all working parts.

Space Required to Fix, 6ft. × 6ft.

This Patent Power Brick Press is particularly adapted for Plastic Brickmaking. It presses the rough Bricks, round columns, or pieces of Clay of any convenient shape direct from the Pug Mill, into facing or paving Bricks, equal to hand-pressed Bricks, at a cost not exceeding Threepence per 1,000 over common wire-cut or hand-made Bricks.

This Machine will press from 1,400 to 1,500 Bricks of any thickness per hour direct from the cutting-off table and the pressure given can be varied at pleasure, to suit any kind of Bricks.

The Press Box can be steam jacketed or not, as required by purchasers.

The power necessary to drive the Press is about one horse.

Price on Rails, £85 Nett.

These Presses can be seen working at the Peel Tileries, Wilnecote, near Tamworth; Hockley Hall Blue Brick Works, Tamworth, Stoke-upon-Trent; Accrington; Ruabon; Melbourne, near Derby; and other places.

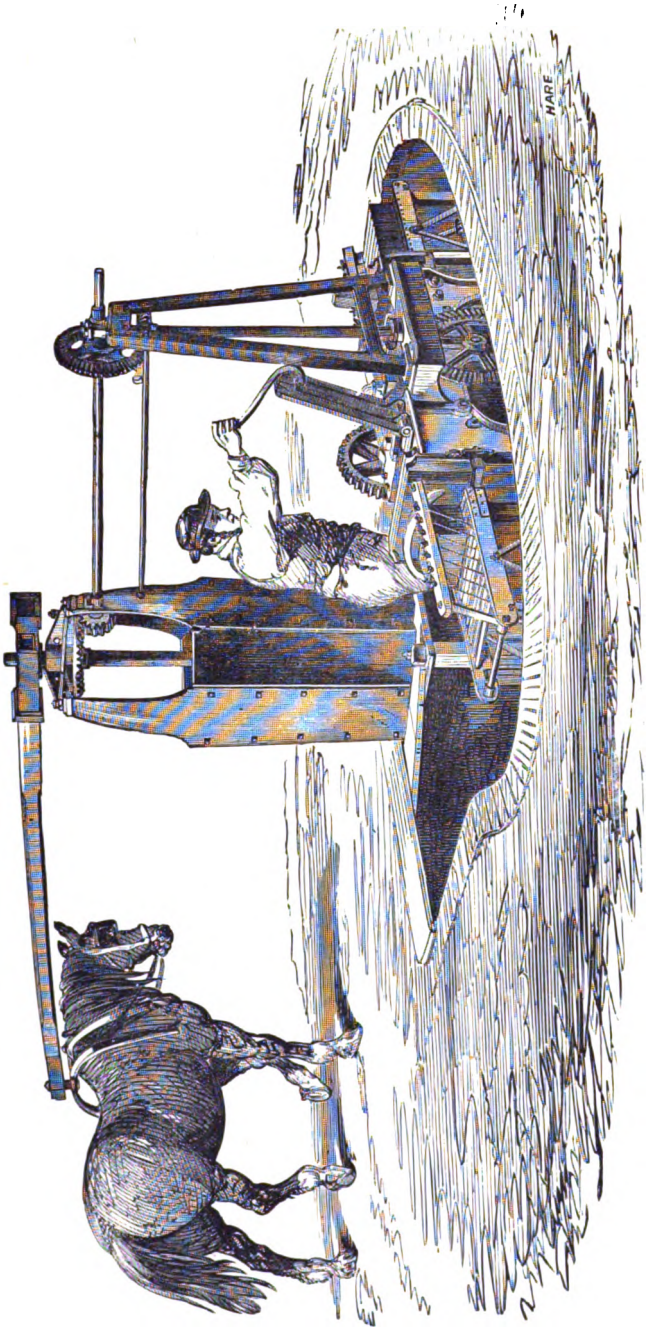
Presses have also been supplied to New Zealand and the Cape of Good Hope, which have given the greatest satisfaction.

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E. PAGE & Co.'s

PATENT CONJOINED PUGGING MILL, DOUBLE-CHAMBER BRICK, DRAINING PIPE, AND TILE MACHINE,

No. 6, ARRANGED FOR HORSE POWER.



This Engraving illustrates one of the most simple methods of driving a Brick and Tile Machine and Pug Mill by Horse Power, or Steam, or Water Power.

The whole Machine is self contained and can be fixed anywhere, requiring no extraneous brackets or overhead motion.

The Clay, after being tempered in the Pug Mill, is forced out at the bottom and cut into pieces of suitable size to fill the two boxes of the Machine alternately.

The Plungers are driven by eccentrics which obviate the necessity of reversing the Machine or risk of breakage.

The Machine is well adapted for the manufacture of solid, perforated, and hollow Bricks, Roofing, Flooring, and Ridging Tiles and Pipes up to seven inches diameter.

Price of No. 6 Machine with Pug Mill, Double-Chamber Brick, Pipe, and Tile Machine, with 2 lubricating brick dies, two stages, connecting gear, and horse works, as illustrated £72 0 0

E. PAGE & Co., Victoria Iron Works, Bedford.

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No. 1 A PATENT SELF-ACTING

BRICK MAKING MACHINE,

Capable of Making 15,000 to 20,000 First-Class Solid Bricks per Day of Ten Hours, when driven by a Six or Seven-horse Power Steam Engine.

This make per day can be largely increased by simply increasing the driving power.

PERFORATED BRICKS, COPINGS, CORNICE, &c., &c., can be made by adding the necessary Dies.

This Machine has a strong metal frame and is so arranged that all the wearing parts are easily adjusted or removed. The clay having (where necessary) been passed through suitable preparing machinery, falls from the same into the self-acting feed hopper, which thoroughly mixes and feeds it into the propelling portion of the machine, where every particle of air is expelled from it and the proper quantity of lubrication being applied through the Patent Compressing Chamber and Die, it issues from the machine on to the cutting table **in one continuous stream,** only requiring it to be cut into Bricks of any required thickness. The clay is then cut off, say 10 bricks, 3¼ inches thick each, at each stroke of the cutter. This cutter is so arranged that the bricks are cut with perfect accuracy, while the clay is moving forward, without any waste of clay or loss of time. And further to economise labour and to maintain the perfect form of the bricks, each table full of bricks are delivered simultaneously by the hand of the attendant, on to the Patent Bearing-off Barrows, ready for wheeling away to the hacks or walls. No separate handling being required the perfect form of the bricks is maintained. The delivery of the bricks being continuous and uninterrupted, 15,000 can readily be made per day of 10 hours, and more can be produced by simply increasing the driving power. The bricks are sufficiently stiff to be removed at once from the Machine and walled six or eight high.

The number of hands required in connection with the Machine necessarily varies with the distance from which the clay has to be fetched, and to which the bricks have to be taken. In many instances three men in the mine, one on the top of the incline, one to work the cutting-table and load the barrows, three boys and three men to wheel away and wall, are amply sufficient, so that the total cost of the foregoing operations varies from 1/9 to 2/9 per 1,000.

Price, Complete, for Solid Brickmaking £140 0 0

Patent Bearing-off Barrows ... ... £4 each.

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No. 1 PATENT COMBINED

CRUSHING, PUGGING, & BRICKMAKING MACHINE,

Is adapted to clays that require more preparation than the self-acting feed of the No. 1 A will give. It is also self-contained, requiring no timber framing, except the stage to tip the clay upon. The roll carriages are so arranged that the rolls can be got in and out without removing the stage, and the cast iron frame has only to carry the weight of the machinery, the strain of crushing the material being upon four strong wrought iron bolts, but in order to prevent accidents a safety arrangement is provided, so that in the event of iron or other hard substance getting in the rolls, no harin would result to the machinery.

The Pug Mill is fitted with a strong wrought iron shaft, into which is fitted a number of strong wrought iron blades. In the event of repairs being required the top half of the Pug Mill Cylinder can be removed, so as to get at the interior.

The whole of the Machinery is made very strong and massive, so as to withstand the rough usage this class of machinery is subject to. The clay on leaving the pug mill passes into the expressing rolls, where the proper quantity of lubrication having been applied through the patent compressing chambered die it issues from the machine on to the cutting table **in one continuous stream,** only requiring it to be cut into bricks of any required thickness. The clay is then cut off, say 10 bricks, 3¼in. thick each, at each stroke of the cutter. This cutter is so arranged that the bricks are cut with perfect accuracy, while the clay is moving forward, without any waste of clay or loss of time. And further, to economise labour and tc maintain the perfect form of the bricks, each table full of bricks are delivered simultaneously, by the hand of the attendant, on to the Patent Bearing-off Barrows, ready for wheeling away to the hacks, or walls. No separate handling being required the perfect form of the bricks is maintained. The delivery of the bricks being continuous and uninterrupted, 15,000 can readily be made per day of 10 hours, and more can be produced by simply increasing the driving power. The bricks are sufficiently stiff to be removed at once from the Machine and walled six or eight high.

The number of hands required in connection with the Machine necessarily varies with the distance from which the clay has to be fetched, and to which the bricks have to be taken. In many instances three men in the mine, one on the top of the incline, one to work the cutting table and load the barrows, three boys and three men to wheel away and wall, are amply sufficient, so that the total cost of the foregoing operations varies from 1/9 to 2/9 per 1,000.

Price, Complete, for Solid Brickmaking £250 0 0

Patent Bearing-off Barrows, extra... ... ... £4 each.

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No. 1 B PATENT COMBINED

PUGGING, BRICK AND TILE MAKING MACHINE.

This Machine is precisely the same in size and principle as the No. 1 A, but, in place of the Self-acting Feed, it is fitted with a Cylindrical Pug Mill, that is arranged so as to thoroughly mix the Clay and at the same time feed the propelling Rollers.

The Machine is fitted with Patent Compressing Chamber and Die, and Patent Side-delivery Cutter, whereby Bricks can be produced of a first-class quality at a very small cost.

Price £190 0 0

No. 2,

BRICK, ARCHITECTURAL MOULD, AND DRAIN PIPE MACHINE.

This Machine is also in every respect the same as the Two preceding ones, with the exception of the Cutter.

In the place of the side delivery an Improved Patent Travelling Table, called the A.A. Cutter is substituted. This Cutter is also so arranged that the Bricks are cut with perfect accuracy while the clay is moving forward, and without the loss of any clay or time whatever. This Machine and Cutter is also suitable for making Drain Pipes of any usual size. The power required is the same as No. 1.

Price, Complete, for Solid Brickmaking... ... ... £125 0 0

IMPROVED No. 3,

BRICK, ARCHITECTURAL MOULD, AND DRAIN PIPE MACHINE,

To be Driven by Steam or Animal Power.

WITH IMPROVED PATENT SIDE-DELIVERY CUTTER.

This Machine is capable of Making 10,000 Solid Bricks per Day of Ten Hours, when driven by a Six-horse Power Engine.

It is precisely the same in principle as No. 1 A, but smaller, to render it more portable for Contractors' purposes and exportation, and is fitted with Patent Compressing Chamber and Die, and all other improvements.

Price, with Self-acting Feed £120 0 0

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IMPROVED No. 4,

BRICK, ARCHITECTURAL MOULD, AND DRAIN PIPE MACHINE,

To be Driven by Steam or Animal Power.

WITH A.A. CUTTER.

Capable of making 12,000 Solid Bricks per Day of Ten Hours, when driven by a Six-horse Power Engine.

This Machine is the same in size and principle as No. 3, but instead of the Self-acting or Side-delivery Cutter, it has the "A.A." Travelling Cutter previously described. It is fitted with Patent Compressing Chamber and Die, and all recent improvements. There being no stopping to cut, or loss of clay, this Machine readily produces 11,000 Solid Bricks or Drain Tiles per day, when driven by a Six-horse Power Engine.

Price, Complete, for Solid Brickmaking £105 0 0

IMPROVED No. 5,

BRICK, ARCHITECTURAL MOULD, AND DRAIN PIPE MACHINE,

To be Driven by Steam Power.

WITH NEW PATENT A.A. TRAVELLING CUTTER.

This Machine is the same in principle as the preceding; has a strong metal frame, and is fitted with safety friction which prevents breakage; has New Patent Compressing Chamber and Die, and A.A. Cutting Table; it readily produces 6,000 to 10,000 Bricks, or 12,000 to 14,000 Drain Pipes per day, when driven by a Four-horse power Engine.

Price, for Solid Brickmaking £80 0 0
Without Self-acting Feed £60 0 0

The Improved Patent Side Delivery Cutting Table and Barrow can be used with this Machine by paying the extra cost for same.

No. 6

BRICK, ARCHITECTURAL MOULD, AND DRAIN PIPE MACHINE.

This Machine is in every respect similar to No. 5, with the exception of the Cutter, this one being fitted with an ordinary Hand Cutter instead of the A.A. The power required to drive it is the same as No. 5, but the Feed having to be withheld while the Cut is made, the production is reduced to 6,000 or 7,000 per day.

Price, Complete, for Solid Brickmaking £50 0 0

No. 7

BRICK, ARCHITECTURAL MOULD, AND DRAIN PIPE MACHINE.

This Machine is the same as No. 6 in all respects, with the exception of its being adapted for Horse-power instead of Steam. It yields, when worked by Horse, from 3,000 to 5,000 Solid Bricks per day.

Price, for Solid Brickmaking £44 0 0

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PATENT BRICK AND TILE MACHINE "A."

Guaranteed capable of producing 25,000 Bricks per Day of Ten Hours, requiring Twelve-Horse Power to drive it.

The clay requires no expensive tempering, but simply to be dug and supplied with water sufficient to reduce it to a plastic state. It is then passed through the Pug Mill, in which are a series of knives which press it downwards into the bottom chamber, from which, by means of the revolving arm, it is forced through dies on to the rollers of the cutting frame, perforated or solid Bricks and Tiles being produced at pleasure. Each semi-revolution of the arm forces through one of the dies a band of clay sufficient to make from four to six Bricks, which is produced at either side of the Mill alternately, allowing the clay to be stationary whilst being cut, thus ensuring uniform size with straight sides and well-defined angles. This simple arrangement of the chamber at the bottom of the Mill, and the arm revolving in it, constitutes a most important improvement and is altogether new.

The Machines are constructed entirely of iron, weigh nearly five tons, and are driven by tooth gearing protected by friction straps, the whole being so strong and simple as to render breakage almost impossible.

For simplicity, efficiency, and economy they stand unrivalled, and will produce a greater quantity of Bricks of superior quality and in a shorter space of time with less expenditure of power than any other machine ever offered to the public.

They may be seen in different parts of the country.

Price, including Royalty, Complete for Brickmaking £140 0 0

With each Machine is given a Guarantee to produce 25,000 Bricks per day.

PATENT BRICK AND TILE MACHINE "B."

These Machines produce 14,000 Bricks per day with 8-horse power, and are similar in every respect to the "A" Machine, except that they are of a smaller size. Weight nearly three tons.

Price, Complete for Brickmaking... ... ... £68 0 0

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PORTABLE BRICK AND TILE MACHINE "C."

Guaranteed capable of producing 12,000 Bricks per day of 10 hours, or 20,000 2in. Tiles, other sizes in proportion up to 16in diameter. This Machine may be easily driven by a 4-horse power engine. It is extremely useful in a small Yard or to a Contractor, as it requires no foundation, but can be moved about to any part of the yard or field, and set at work again within the hour.

For Bricks the Clay requires no more tempering than is usual for hand-making; and this Machine is so efficient and simple that well-moulded Bricks and Tiles are rapidly produced by labourers, skilled or unskilled, whether previously accustomed to make Bricks or not.

The motion is continuous, the Machine being easily fed with clay whilst at work, and altogether it is a most suitable Machine both for home use and exportation.

Besides making either perforated or solid Bricks stiff enough to be walled 8 feet high, direct from the Machine, thus doing away with the flat ground, they make Pipe Tiles any size from 1½in. to 16in. diameter inside, and 4 feet long if required. Pipe Dies for the same £1 15s. each; Double Cutting Frame, suitable for any size of pipe, £5.

Price, Complete for Brickmaking, including Royalty... ... ... £48 0 0

The Patentees are prepared to supply purchasers with suitable Portable Engines, with all requisites for working the "C" Machines, at very moderate rates.

PATENT BRICK AND TILE MACHINE "D."

Worked by hand power, and guaranteed capable of producing 5,000 Bricks per day of ten hours, or 10,000 2in. Tiles, and other sizes in proportion up to 16in.

For Bricks the Clay requires no more tempering than is usual in hand-making, and the Machine is so simple and efficient that well-moulded Bricks or Tiles of superior quality are rapidly produced by labourers, skilled or unskilled, whether previously accustomed to making Bricks or not.

The motion is continuous, the Machines being easily fed with clay whilst at work, and the Bricks are delivered sufficiently stiff to allow of walling direct from the Machines, flat ground being no longer required.

The Price is extremely moderate, being only £28, and the Machine is well adapted for home use or for exportation.

The "D" Machine makes Pipe Tiles, any size from 1½in. to 16in. inside diameter and 4ft. long if required. Pipe Dies for the same £1 15s. each; Double Cutting Frame, suitable for any size of pipe, £4 15s.

Price, Complete for Brickmaking, Royalty included £28 0 0

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ROLLER BRICK MACHINE.

Guaranteed to Make 16,000 Bricks per Day, with 8-horse Power Engine.

This strong and efficient Machine, weighing above 3 tons, is well adapted for strong marley clay, which it prepares in a better manner and with less expenditure of power than any known Pug Mill can do. The clay is simply tipped into the hopper, from which it passes through the rollers into the chamber beneath, from which it is forced by the revolving arm through the dies. The motion of the arm being alternated, each band of clay is stationary in turn, thus allowing time for cutting, ensuring a good, sound, and well formed Brick. Each semi-revolution of the arm makes from five to six Bricks.

Price, Complete for Brickmaking... ... ... **£75 0 0**

PATENT SHEDS FOR DRYING BRICKS, TILES, ETC.

In these Sheds the leading feature is the great economy of time and fuel. Beneath the fire-flue is an air-flue, which breaks the connection with the ground, thereby preventing the heat from the furnace drawing any moisture from the earth.

The heated air from the furnace passes under the whole length of the floor of the Shed, at the end of which it rises through openings in the floor into the Shed, along which it travels back on its road to the chimney, drying the Bricks or Tiles on its way, and carrying with it the steam generated in the operation.

When 60ft. long and five feet wide, each shed will contain 5,000 Bricks, which can be thoroughly dried in 24 hours, with a consumption of 5 cwt. of small coke or engine ashes, or 1 cwt per 1,000 Bricks. The Bricks are placed direct from the Mill on small iron wagons, fitted up with suitable trays, which are capable of carrying 500 Bricks each, are then run on a tramway into the flues, and thence, when sufficiently dried, into the kiln. By this arrangement, after coming from the Mill, the Bricks are not handled until they are set for burning; and the flues do not require to be cooled down for drawing. With the wagons, four flues are sufficient for a yard making 20,000 Bricks per day.

The cost of such a flue, with wagons and railway complete, is about £120, or £400 for four flues.

A few of the Advantages derived from the use of these Flues are—

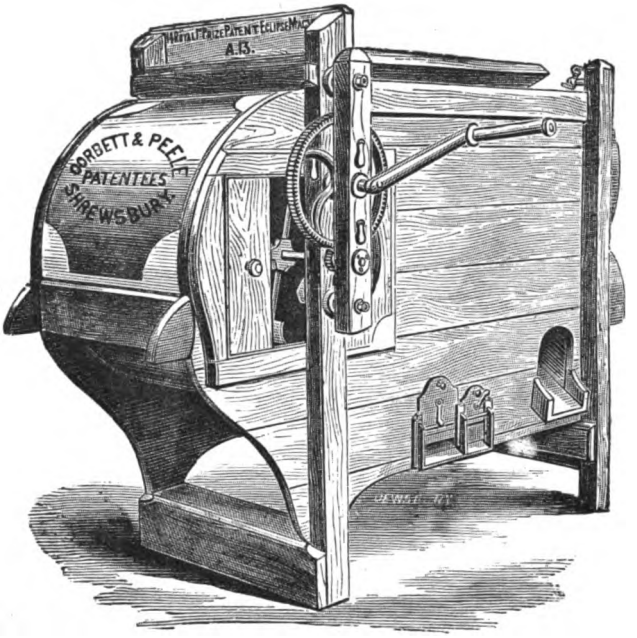
1. No risk of waste from the weather.
2. The work can go on in all weathers, both winter and summer.
3. The cost of the fuel is not one quarter the cost of wheeling to and from the "flat ground;" there is no expenditure for labour in stacking and re-stacking, and no loss in turning over.
4. Where an engine is used, the waste heat from the boiler can be conducted through the flues, and thus effect a great saving of fuel in drying.
5. Any other like ware can be dried equally as well as Bricks or Tiles.
6. Each flue, covering an area only of 5 feet by 60 feet, will hold 5,000 Bricks, which can be dried in 24 hours, with 5 cwt. of small coke, or 4d. per 1,000 Bricks.

Licenses for the use of those Flues can be had by applying to the Patentees.

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CORBETT AND PEELE'S
NEW PATTERN "ROYAL SCOTSMAN" SIDE DELIVERY MACHINES.

Are ADMIRABLY ADAPTED for Districts where the GRAIN and SEEDS are PREFERRED to be DELIVERED on SIDE of MACHINE.



Are SPECIALLY DESIGNED for Districts where the GRAIN and SEEDS are PREFERRED to be DELIVERED on SIDE of MACHINE.

DRAWING OF A10, A11, and A12 MACHINES.

The above drawing represents Machines specially designed for some parts of Scotland and for districts where the grain is preferred to be delivered into measures on side of Machine. These Machines contain all the improvements suggested by a lengthened series of experiments, and they can be safely relied upon as being **much superior to any** of their kind extant. Additional Screening Surface is gained by applying an Extra Long Bottom Tray or Sieve underneath Riddles through which the small seeds and refuse pass into a spout below, and are delivered to side of Machine, while the Grain passes over the tray into another spout adjoining and at front of seed spout, and is delivered on **opposite** side of Machine. The two portable boards forming bottom of spouts can be adjusted so as to deliver Grain on **right** hand side of Machine, and Seeds, &c., on **left** hand side, or *vice-versa*.

Machine marked A10.....	Size of Riddles 20in. wide by 18in. long ...	..	...	£8 5 0
,, ,, A11.....	ditto 18in. wide by 18in. long ...	...	...	£7 15 0
,, ,, A12.....	ditto 16in. wide by 18in. long ...	...	...	£7 0 0

Six Riddles for Dressing Wheat, Barley, Oats, Peas, and Beans are included in the above Prices.

Nostril Boards so essential when Dressing Oats, &c., applied in all the above Machines.

EXTRAS WHEN REQUIRED.

Riddles with Small Meshes, Sieves, Screens, and Board, for Dressing Seeds, Extra.

Roughing Apparatus for regulating Feed when dressing Grain, containing Chaff, &c., as delivered by the Horse-power Thrashing Machine. Extra 5s. 0d.

Blowing Hopper (in addition to C. & P.'s Blowing Arrangement as applied in all the above Machines) fitted to A10 and A11 Machines, Extra £1. A12 Machine, 15s. 0d.

Patent Transverse Moving Riddles, Extra 5s. 0d.

P.S.—The above Machines are Oaked Grained and Varnished which adds much to their appearance and durability.

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CORBETT AND PEELE'S

IMPROVED PATENT "ECLIPSE" COMBINED

BLOWING, WINNOWING, CORN DRESSING, AND SCREENING MACHINE,

Has Gained Upwards of One Hundred and Twenty Royal and other Societies' First Prizes since 1867.

This Machine combines the Three modes of Cleaning Grain, viz. : Blowing, Riddling, and Screening. It is the result of a Series of Trials with all kinds of Grain, and is now offered as the **Simplest, Lightest in Working, and most Efficient Machine** yet introduced.

It is constructed of the best Material, and by Skilful Workmen, great care having been exercised in the perfecting of **all its essential points.** The Height has been considerably reduced, which admits of the hopper being very easily filled. The Blast is very powerful (which is conducted to the riddles by boards specially applied for that purpose), and can be regulated by the Nostril Boards when dressing Oats and other Light Grain. It is fitted with a Long Screen, the full width of interior of Machine, which by a simple contrivance is made to oscillate, whereby the grain is moved in a longitudinal direction in its course to front of Machine. The Pitch of the Screen can be easily altered, by which more or less Grain can be taken out, as may be required, this being a most important feature, and in which particular, this Machine **excels all others of its class.** The Riddles are all hand woven, and of the best Charcoal Wire. The Wire-work on Screen and Sieve is of Steel, and made by Machinery, whereby uniformity in Meshes is obtained. This Machine is very easily converted into a most effective and perfect Blowing Machine without any additional cost.

Machine marked	A1.....	Size of Riddles	22in. wide by 18in. long...	£10	12	6
,, ,,	A2.....	,,	21in. wide by 18in. long...	£10	5	0
,, ,,	A3.....	,,	20in. wide by 18in. long...	£9	15	0
,, ,,	A4.....	,,	18in. wide by 18in. long...	£9	0	0
,, ,,	A5.....	,,	16in. wide by 18in. long...	£8	10	0

Machines Marked A1, A2, or A3, strongly recommended.

Six Riddles for Dressing Wheat, Barley, Oats, Peas, and Beans, are included in the above Prices.

Nostril Boards, so essential when Dressing Oats, &c., applied in all the above Machines.

EXTRAS WHEN REQUIRED.

Riddles with Small Meshes, Sieves, Screens, and Boards for Dressing Seeds Extra.

Roughing Apparatus for regulating Feed when dressing Grain containing much Chaff, &c., as delivered by the Horse-power Thrashing Machine, 5s. 0d. extra.

Portable Bottom Screen Frame, for reception of Screens with different size Meshes, extra 5s. 0d.

Blowing Hopper (in addition to C. & P.'s Blowing Arrangement as applied in all the above Machines) fitted to Machines A1, A2, and A3, extra £1. A4 and A5, extra 15s. 0d.

Patent Brush for Cleaning Bottom Oscillating Screen, extra 10s. 0d. Patent Transverse Moving Riddles, extra 5s. 0d.

The Dressing Machines are Oak Grained and Varnished.

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J. BAKER'S ROYAL GOLD MEDAL PRIZE

BLOWING, WINNOWING, AND SCREENING MACHINES.

These Machines are manufactured by Special Steam Machinery, every part being made in duplicate to a Standard Guage, thus ensuring an accuracy of fit and great facility of repair. They are capable of Cleaning Grain-as fast as one man can fill the Machine.

PRICES:—

No. 1 Machine complete with Blowing Apparatus, Riddles 22 by 18 inches ... £10 0 0
No. 2 Same as No. 1, without Blowing Apparatus £9 0 0
No. 3 Machine without Blowing Apparatus, Riddles 18 by 18 inches £8 0 0
Blowing Apparatus, 15s. extra.
No. 4 Machine Riddles, 16 by 16 inches £6 10 0
Blowing Apparatus, 10s. extra.
Small Seed Riddles to any of the above, 10s. extra.

COOCH'S CORN DRESSING MACHINE.

This Machine is very compact, portable, and adapted for exportation. The working parts are simple and the draught light.

This Machine has Two Feed Rollers, one or both of which can be used at pleasure, and by means of these a regular feed is ensured (although the sample may contain stones, straws, or any other foreign substance), which is a great acquisition in dressing Corn, for it is impossible to make a good sample with an irregular feed.

It is strongly recommended for general purposes and for exportation, and is unequalled for quality of material and workmanship, ease in working and general efficiency.

The results of the trials in connection with the Royal Agricultural Society of England are sufficient guarantee for its excellence, for it has been awarded **every First Prize** for which it has competed since the establishment of the above Society, the last of which was at Cardiff, in the year 1872 in competition with 29 Machines by the principal makers in Great Britain. It is necessary to state that the Royal Society only offers prizes for Dressing Machines once in seven years, consequently the above prize holds good until the year 1879, when there will probably be another competition.

PRICES:—

No. 3 Machine, with Eight Riddles and Three Screens £14 10 0
Will dress 12 quarters per hour.
No. 4 Machine, 3 inches wider, with Eight Riddles and Three Screens £15 10 0
Will dress 15 quarters per hour.
Pea Screen, 5s. extra.
Apparatus for Dressing Small Seeds, £2 extra.
Corn Elevator, £5 extra.
Riddles between any of the ordinary sizes can be supplied for the foregoing Machines at 5s. each.
Either of the above Machines can be fitted with Seed Apparatus, for Seed Merchants' use, at the same price as for Corn.

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PATENT ANTI-LITHON COMPOSITION

FOR THE PREVENTION OF INCRUSTATION IN STEAM BOILERS.

This Composition has been for a long time in use at Her Majesty's Royal Arsenal at Woolwich—and the Officials there, having subjected it to the severest analytical tests, have pronounced it to be perfectly innocuous to metals, and further expressed their entire approbation of it as a complete preventive of incrustation. The Manufacturing Community too, has extensively bestowed its patronage, and given to the Composition its unqualified approval by renewed orders.

The advantages gained by the use of the Anti-Lithon Composition are—

That it entirely prevents the formation of incrustation—and being purely vegetable, it contains no mineral acid, and is, therefore, friendly to all kinds of metal. Further, it has no properties inimical to health, even if its solution should, by mistake, be taken for any other fluid.

Another important fact connected with this Composition is, that it will be found very economical. It is well known that incrustation on the Boiler of merely the thickness of an egg-shell, causes a waste of fuel, in order to generate steam, to the extent of 15 per cent.—and as Boilers are seldom cleaned until necessity compels, incrustation has oftentimes been found accumulated to the thickness of half an inch, more or less; the quantum being dependent upon the properties of the water employed. In such cases the waste of coal is enormous. Again, incrustation exposes the Boiler-plates unduly to the action of the fire, by preventing the water coming into immediate contact with the metal and this causes the Boiler-plates to be burnt rapidly away. Nor must we omit to notice the loss occasioned by stopping work, whenever it becomes necessary to scale the Boiler; and the injury the Boiler sustains by the removal of the incrustation by force of hammer and chisel—not to mention the loss of life and property when explosions take place, occasioned, in most cases, by incrustation formed on the Boiler-plates, and the clogging of pipes and valves—are evils so great as to involve the weightiest responsibility, but which are entirely prevented by use of the Patent Anti-Lithon Boiler Composition.

N.B.—The cost of the Composition is 4½d per month for every nominal horse-power, and which is more than saved in fuel.

Sold in 28lb. Boxes, at 84s. per cwt.

DIRECTIONS FOR USE:—

STATIONARY BOILERS.—For every nominal horse-power introduce half a pound of the Composition into the water in Boiler, which will preserve the Boiler clean for one month; the process to be repeated every succeeding month. The mud or deposit should be cleaned out as occasion may require, and where the water is very foul, should be done once a month; in others, at intervals of two or three months will be found sufficient. The engineer must avoid blowing off as much as possible, as the process carries off much of the Composition. Mud or precipitation only is to be blown off.

MARINE AND LOCOMOTIVE BOILERS.—For every nominal horse-power put two ounces of the Composition into the water in Boiler, which will preserve it from scruff for one week, and repeat the same process weekly. The mud to be cleared out as circumstances may require; but the engineer should avoid blowing off as much as possible for the reasons before stated for Stationary Boilers. In Marine Boilers the scum cock should be occasionally used.

N.B.—In all descriptions of Boilers, whether Stationary, Marine, or Locomotive, the old incrustations should be carefully removed before using the Composition, as we do not profess its properties to be solvent (absolutely) but preventive. The Composition must be kept dry. When required for use, knock out the sides of the box, weigh off the proper quantity, and dissolve it in warm water, if deemed desirable; or it may be introduced into the Boiler at once, without doing so.

TOWNSEND & YOUNG'S

PATENT COMPOSITION,

FOR PREVENTING INCRUSTATION & CORROSION IN STEAM BOILERS.

The Composition is sold in Casks of 15 Gallons and upwards, at 2/- per Gallon.

Warranted not to contain Poison, or anything injurious to any kind of Metal.

STATIONARY BOILERS.—One pint per month to every nominal horse-power of the Boiler, but if it works day and night, a double quantity.

LOCOMOTIVE BOILERS.—From one to two quarts daily.

MARINE BOILERS.—At the rate of one gallon daily to every 100 horse-power; but with surface condensers, one-fourth of that quantity, which may be introduced weekly or fortnightly.

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BUCKETS (GALVANIZED IRON), HOUSE PAILS, &c.

Extra Strong for Builders and Contractors,—Half-round Bail.

	Painted.	Galvanized.
	No. 0.	No. 1.
Light 12″	42/6 per doz.	47/6 per doz.
Strong 12″	48/- ,,	56/- ,,

No. 2 Extra Strong for Stable Use, with welded Tee Iron Base,—Round Bail.

11″	12″	13″	14″
34/-	37/-	42/-	48/- per dozen.

No. 3 Strong, with Rivetted Sides and Foot,—Round Bail.

11″	12″	13″	14″
26/-	29/-	32/-	35/- per dozen.

No. 4, similar to No. 3, Stout Hoop Foot and Round Bail.

11″	12″	13″	14″
25/-	28/-	31/-	34/- per dozen.

No. 4½ similar to No. 4, with half-round Bail.

10″	11″	12″	13″	14″
18/-	20/-	21/-	24/-	26/- per dozen.

No. 5 Strong, with Grooved Sides, Hoop Foot and Half-round Bail.

10″	11″	12″	13″	14″
21/-	23/-	25/-	28/-	31/- per dozen.

No. 6 Light, with Grooved Sides, Hoop, Foot, and half-round Bail.

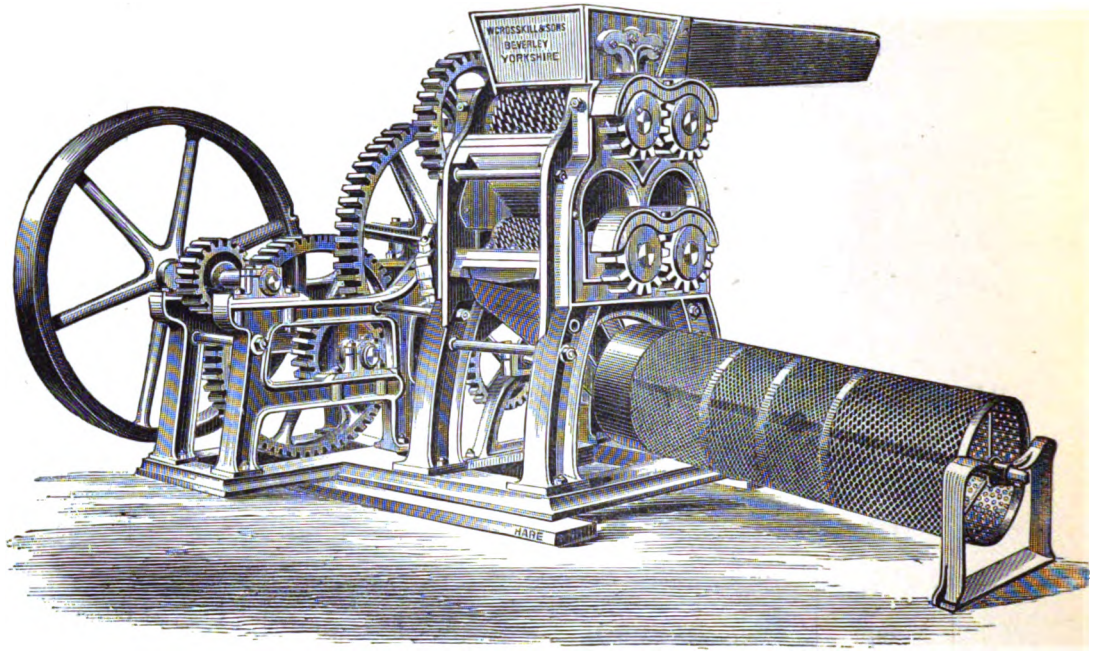
10″	11″	12″	13″	14″
13/-	14/-	15/-	17/-	20/- per dozen.

No. 8, Straight Side Buckets.

11″	12″	13″
38/-	42/-	48/- per doz.

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CROSSKILLS' IMPROVED DOUBLE ROLLER BONE MILL.



This is a very powerful and compact Machine, with a massive cast iron frame and foundation plate, and when attached to a ten-horse power Steam Engine or Water Wheel, it will crush and dress about 15 or 20 tons per day.

This Mill has two pairs of Rollers with Cutters (made of the best wrought iron, and well case-hardened) for crushing the Bones, a revolving Riddle for separating them into rough, half-inch, and dust, and a friction Sheave for preventing accidents to the cutters.

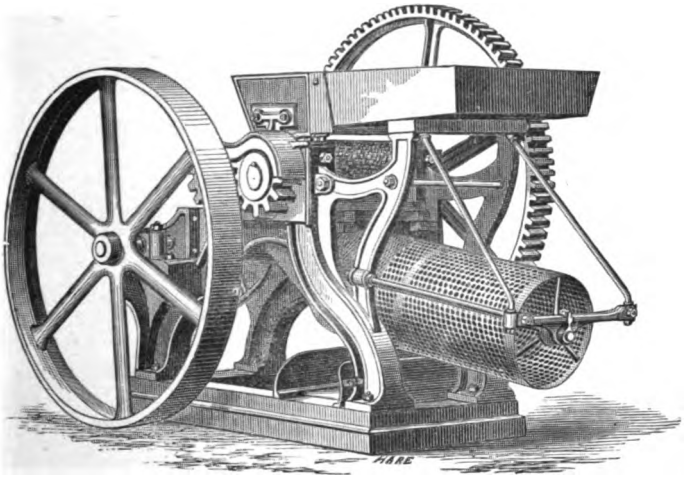
Price of the Mill and Revolving Riddle, 5 ft. Spur Wheel, and extra Shafts, with Fly Wheel, to be driven direct by a strap from a Portable Steam Engine Fly Wheel (at Works). £250 0 0

Price of the Mill and Riddle, with Main Shaft for driving, but without Spur Wheel, extra Shafts, and Fly Wheel (at Works), ... £230 0 0

Friction Sheave extra, £6 10s.

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CROSSKILLS' IMPROVED SINGLE ROLLER BONE MILL.



The want of a simple, durable, and efficient Bone Mill, to be driven by a strap from the fly wheel of the common Portable Engines (now so generally used for Agricultural purposes), has long been felt by parties desiring to grind moderate quantities of Bones for their own use, and the Mill engraved above has been constructed to supply this want.

It consists of a pair of strong Rollers made of wrought iron, Cutters case-hardened, and a revolving Riddle for separating the ground Bones as they fall from the Cutters; and the whole is carried by a strong and substantial cast iron frame, which can be set down upon a stone or timber foundation, requiring very little fixing, and capable of being removed, when required, with little trouble.

The Fly Wheel will take a strap 6in. broad, and is sufficiently heavy to overcome the sudden resistance offered by knuckle or very hard bones, without causing the strap to be thrown off; its size can be regulated to suit the Engine Fly Wheel, so that it may be driven direct without any wheels or intermediate motion.

When driven by a Six-Horse Engine, this Mill will grind from 7 to 10 cwt. per hour.

Price of Mill complete, with Fly Wheel and Revolving Riddle, (at Works), ... £97 10 0

Friction Sheave extra, £5 10s.

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BULL RINGS.

Bull Rings, per dozen	24/-, 27/-, 30/-
Bullock Ties, ,, ...	15/-

BUSHEL, IMPERIAL ENGLISH.

The Imperial English Bushel contains 2216.984 cubic inches.

One Imperial Bushel = 80 lbs. avoirdupois of distilled water weighed in air at the temperature of 62 degrees of Fahrenheit's Thermometer, the Barometer standing at 30 inches.

62° Fahrenheit = 16°.666 Centigrade or 13°.333 Réaumur.

ENGLISH MEASURES OF VOLUME.

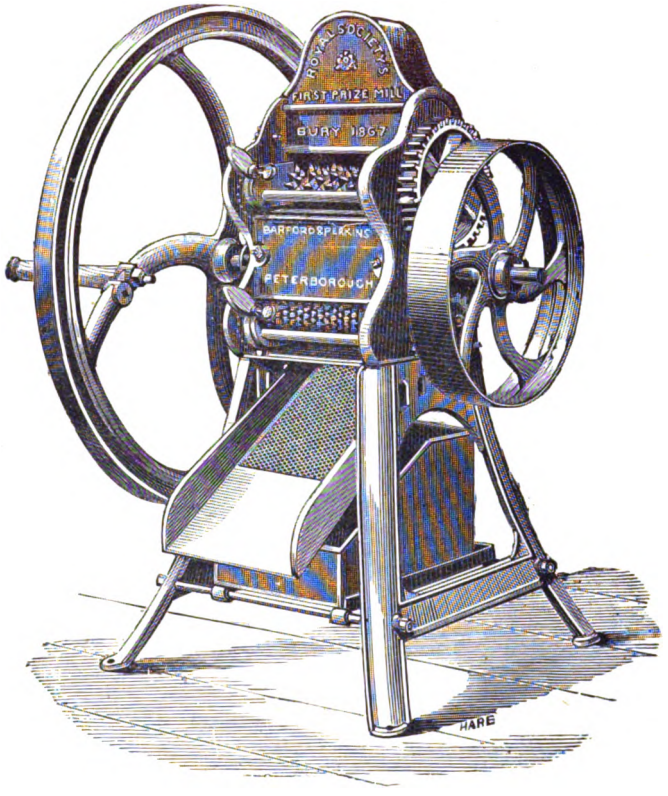
2 Pints	=	1 Quart	4 Pecks or 8 Gallons	=	1 Bushel
4 Quarts	=	1 Gallon	8 Bushels	=	1 Quarter
2 Gallons	=	1 Peck.			

One English Imperial Bushel	=	36.32816 French Litres.
,, ,,	=	0.29537 Russian Vedros.
,, ,,	=	31.727 German Viertels.
,, ,,	=	25.673 Austrian Maases.
,, ,,	=	13.880 Swedish Kanns.
,, ,,	=	36.328 Dutch Kans.
,, ,,	=	1.0015 Brazilian Alqueires.
,, ,,	=	1 United States Bushel.

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BARFORD & PERKINS'

IMPROVED ROYAL "BURY" AND "OXFORD" FIRST PRIZE OIL CAKE MILLS.



At the important Trials of the Royal Agricultural Society at Bury St. Edmunds, 1867, and again at Oxford, 1870, the FIRST PRIZE for Oil Cake Mill for Horse or Steam Power, was awarded to No. 2 Mill; and at Oxford the FIRST PRIZE was also awarded to A. B. & Co., for the best Hand Power Mill (No. 3), after the severest competition with all the principal makers.

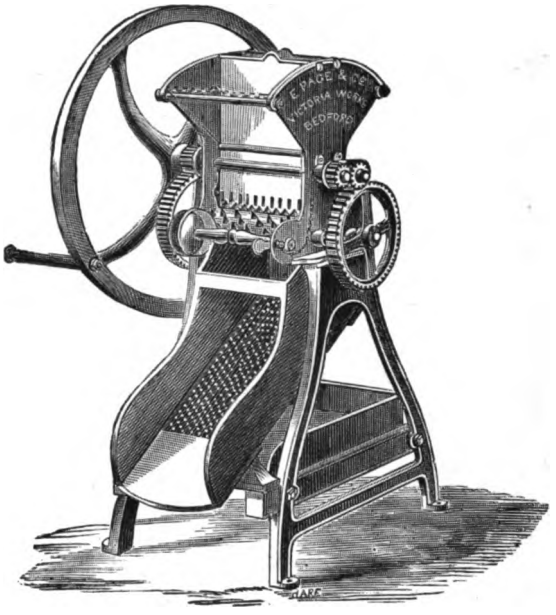
PRICES:—

No. 0.—Extra size Double Roller Mill, will take in the largest cakes length-ways, and will crush 5 tons per hour, by steam power. Adapted for Merchants, Seed Crushers and large consumers	£27 10 0
No. 0x.—Double Roller Mill—16 inches wide—Pulleys extra	£12 10 0
No. 00.—Very powerful Double Roller Mill, made specially wide for the large Foreign Cakes, adapted for Horse or Steam Power, Mouth Piece, 14½in. wide	£12 10 0
No. 00x.—Ditto, ditto, but with Mouth Piece 16in. wide	£14 10 0
No. 1.—Powerful Double Roller Mill, adapted for Horse, Steam, or other power ...	£10 10 0
No. 2.—Medium Size Mill with 2 pairs of Adjustable Rollers, very strong, adapted for Manual or Horse Power	£7 0 0
Pulleys for power for either of the above Mills, 18in. diameter, each	£0 14 0

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E. PAGE & Co.'s

IMPROVED CAKE MILLS.



These Machines are exceedingly strong, and fitted with two Falling Lids to Hopper, have a heavy Fly Wheel, and are particularly easy in working; they are quickly adjusted to break seven different sizes, and are fitted with Drawer for dust.

L C 14	Cake Mill—Mouth Piece 14in. wide	£3	17 6
L C 12	Ditto Mouth Piece 12in. wide	£3	12 6
N C M	Ditto Ditto Ditto	£3	7 6
L C 10	Ditto Mouth Piece 10in. wide, fitted with fixed hopper	£3	0 0

14in. Pulley fitted to Fly Wheel, 7s. 6d. extra.

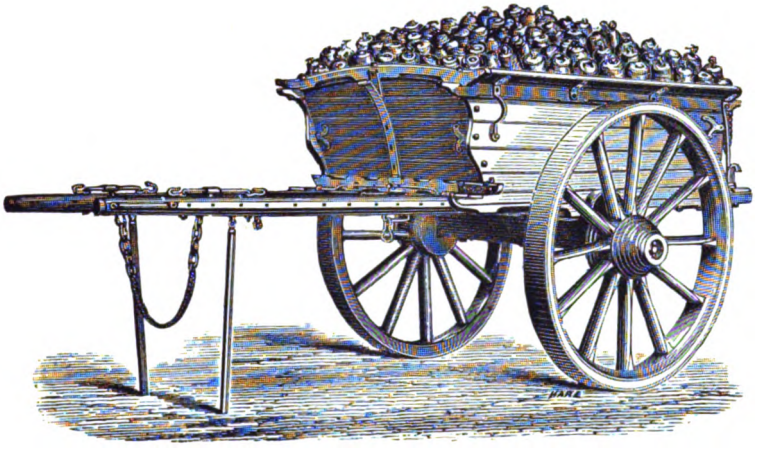
O F New Improved Oil Cake Mill: the teeth of the Rollers are of an improved form; the regulating apparatus has been improved and simplified, and it cannot get out of order; the various parts have been remodelled, and the gear wheels are all protected by neat iron covers. The Mouth is 14in. wide to enable the Mill to take Oil or Cotton Cake. Breaks 6 sizes. Price £3 7 6

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BALL'S

BEDFORD PRIZE CART.

Patronised by Her Majesty the Queen and H.R.H. the Prince of Wales.



The above represents the Bedford Prize Cart, without Harvest Rails, loaded with 25 cwt. of Mangold. It is the most compact and handy Cart ever made.

PRICES:—

One-horse Cart, with 4-inch Wheels	£15 10 0
One-horse Cart, with 4½-inch Wheels...	£16 0 0
Large 2-horse Cart, with 4-inch Wheels	£16 10 0
Large 2-horse Cart, with 4½-inch Wheels	£17 0 0
Double Tipping Apparatus ... ...extra	£0 10 0

Price of One and Two-horse Prize Cart with Harvest Rails.

With 4-inch Wheels and Harvest Rails complete	£17 10 0
With 4½-inch Wheels Ditto Ditto	£18 0 0
Double Tipping Apparatus ... ...extra	£0 10 0
Large 2-horse Cart, with 4½inch Wheels and Harvest Rails, complete	£19 0 0

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BALL'S

MANCHESTER FIRST-CLASS PRIZE ONE-HORSE CART.

Patronised by Her Majesty the Queen.

This Cart is of a very superior construction, with Oak Frame and Plank Sides, very strong and durable. The Tailboard is one very important feature. It is fixed on an Iron Tail-piece, and on loading manure, corn, &c., it takes its bearing on the tipes. It is not only a convenience, but a great advantage, and is never lost.

It is also fitted with an improved Front Iron for delivering manure, &c., in small heaps.

The Harvest Rails are on a much approved principle; they are fitted on in four parts, and when together are very strong, and can be made to any length or width.

PRICES :—

With 4-inch Wheels, $\frac{5}{8}$ Bevel Tire	£15 0 0
With 4½-inch Wheels, $\frac{5}{8}$ Bevel Tire	£15 10 0
If fitted with Harvest Rails ... ...extra	£2 0 0
If fitted with fixed Side Shelving or Deep Boards ... ... ,,	£0 10 0
If fitted with Double Tipping Apparatus ... ... ,,	£0 10 0

LIGHT ONE-HORSE CART.

This Cart is similar in construction to the Manchester Prize Cart, but made much lighter, with narrow wheels, suitable for Farming purposes. It is particularly recommended to gentlemen for Parks, Gardens, and Home purposes. It is fitted with improved Tail-piece and Front Iron, and made of the best materials.

Price, complete	£15 10 0
Shelving ... ...extra	£0 10 0

IMPROVED CRANK-AXLE CART.

This Cart is very low, suitable for Merchants, Brewers, Agents &c., and is made in all sizes.

Price ... ... from £24 0 0

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CROSSKILLS' PRIZE ONE-HORSE CART.

Awarded the Prize by the Royal Agricultural Society of England.

The advantage of using Crosskills' One Horse Carts instead of the old-fashioned ponderous Two Horse Carts, or Heavy Wagons, has been fully proved by experience, and their introduction into any district invariably leads to an extensive use of them.

Prices of Carts for General Purposes:—

No. 00.—Light Pony Cart, to carry 20 cwt., tire 2 by ½	£13	10	0
No. 0.—Very Light Cart, to carry 20 cwt., tire 2½ by ½	£14	0	0
No. ½.—Light One Horse Cart, to carry 25 cwt., tire 2½ by ⅝	£15	0	0
No. ¾.—Light One Horse Cart, to carry 25 cwt., tire 4 by ½	£15	10	0
No. ⅞.—Light One Horse Cart, to carry 25 cwt., tire 4½ by ½	£16	0	0
No. 1.—Strong One Horse Cart, to carry 30 cwt., tire 2½ by ¾	£16	0	0
No. 2.—Strong One Horse Cart. to carry 30 cwt., tire 4½ by ⅝	£17	5	0
No. 3.—Two Horse Cart, to carry 40 cwt., tire 3 by ¾	£20	0	0
No. 4.—Two Horse Cart, to carry 40 cwt., tire 4½ by ¾	£21	0	0
No. 6.—Three Horse Cart, to carry 60 cwt., tire 4½ by ⅞	£25	0	0

Numbers ½, ¾, 1, and 2 are most suitable for Agricultural purposes, and may be had with the following extras if required :—

Patent Axles and Oil Boxes...	£1	5	0
Harvest Shelvings...	£1	15	0
Curved Harvest Raves, in four parts	£2	0	0
Harvest Ladders	£2	0	0

Springs : Price according to strength and size.

CROSSKILLS' CART, WITH HARVEST SHELVINGS.

By attaching a set of Shelvings to the Cart above described it can be used as a Harvest Cart, for loading Hay, Corn, Straw, &c.

PRICES:—

No. ½.—Light One-Horse Cart, to carry 25 cwt., tire 2½ by ⅝	£16	15	0
No. ¾.—Light One-Horse Cart, to carry 25 cwt., tire 4 by ½	£17	5	0
No. 1.—Strong One-Horse Cart, to carry 30 cwt., tire 2½ by ¾	£17	15	0
No. 2.—Strong One-Horse Cart, to carry 30 cwt., tire 4½ by ⅝	£19	0	0

MODEL CART, WITH CURVED HARVEST RAVES.

These Raves assist in securing the load better than flat Shelvings, but they are not so strong or durable.

PRICES:—

No. ½.—Light One-Horse Cart, to carry 25 cwt., tire 2½ by ⅝	£17	0	0
No. ¾.—Light One-Horse Cart, to carry 25 cwt., tire 4 by ½	£17	10	0
No. 1.—Strong One-Horse Cart, to carry 30 cwt., tire 2½ by ¾	£18	0	0
No. 2.—Strong One-Horse Cart, to carry 30 cwt., tire 4½ by ⅝	£19	5	0

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CROSSKILLS'

LEEDS PATTERN ONE-HORSE CART.

Has broad fixed rungs instead of loose sideboards, and fitted with an improved tipping apparatus connected with each shaft.

PRICES:—

No. ½.—Light One-Horse Cart, to carry 25 cwt., tire 2½ by ⅝	£17	0	0
No. ¾.—Light One-Horse Cart, to carry 25 cwt., tire 4 by ½	£17	10	0
No. 1.—Strong One-Horse Cart, to carry 30 cwt., tire 2½ by ¾	£18	0	0
No. 2.—Strong One-Horse Cart, to carry 30 cwt., tire 4½ by ⅝	£19	5	0

If without Harvest Ladders, £1 less.

CROSSKILLS' YORK PATTERN CART.

SUITABLE FOR LIGHT HORSES AND PONIES.

PRICES:—

To carry 15 cwt., with wheels 4ft. high (for Ponies) tire 2 by ½	£13	0	0
To carry 20 cwt., with wheels 4ft. high ditto tire 2 by ½	£13	10	0
To carry 15 cwt., with wheels 4ft. 6in. high, tire 2 by ½	£13	10	0
To carry 20 cwt., with wheels 4ft. 6in. high, tire 2½ by ½	£14	0	0

Harvest Shelvings, £1 15s. extra.

Carts suitable for Millers, Contractors, Brewers, &c., made to order.

CROSSKILLS' CART WITH LONDON HARVEST LADDERS.

This Cart is similar to the last, but with London Harvest Ladders, and is well adapted for carrying large loads of Hay, Corn, &c.

PRICES:—

No. ½.—Light One-Horse Cart, to carry 25 cwt., tire 2½ by ⅝	£17	0	0
No. ¾.—Light One-Horse Cart, to carry 25 cwt., tire 4 by ½	£17	10	0
No. 1.—Strong One-Horse Cart, to carry 30 cwt., tire 2½ by ¾	£18	0	0
No. 2.—Strong One-Horse Cart, to carry 30 cwt, tire 4½ by ⅝	£19	5	0

If without Harvest Gear, £2 less.

IMPROVED SPRING CATTLE CART.

Constructed with moveable cover, and arranged so that Cattle can walk in at one end and out at the other.

Price	£40	0	0

If without the moveable cover, £32 10s. 0d.

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HANNAM'S IMPROVED HARVEST CART.

This is a long Cart with low sides, for harvest work only, and is made low expressly for the purpose of carrying Hay, Corn, &c. The Wheels have convex tire, which does not injure grass land like the flat tire with sharp edges.

Price, with Wheels 4ft. 6in. high tire 4in. wide £17 10 0

CROSSKILLS'
IMPROVED LIGHT CRANKED AXLE SPRING CART.

Suitable for carrying Light Goods in Towns, and Luggage, Sheep, Pigs, &c., &c., in the Country.

Price, to carry 15 cwt. loads £18 10 0
Price, to carry 20 cwt. loads £19 10 0

Patent Axles, £2 extra.

CROSSKILLS' IMPROVED BREWER'S SPRING FLOAT.

This description of Cart is much used in Towns, by Brewers and others, for carrying Casks, &c.

Prices according to Size and Strength.

CROSSKILLS' IMPROVED SPRING MARKET CART.

Price, to carry 15 cwt. loads £17 10 0
Price, to carry 20 cwt. loads £18 10 0

Mail Patent Axles, £2 extra.

CROSSKILLS' CONTRACTOR'S OR BUILDER'S CART.

Prices according to Size and Strength.

CROSSKILLS' IMPROVED SPRING LORRY.

Price, to carry 2 ton loads, Wheels 3in. tire £30 0 0
Price, to carry 3 ton loads, Wheels 3in. tire £35 10 0

Estimates sent for other sizes when required.

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CART WHEELS.

Prices of Improved One-Horse Cart Wheels per pair, for Agricultural Purposes.

Wheels and Axles with Wood or Iron Naves.						Prices of Wheels only, with Wood Naves and without Axles or Bushes.
	Height of Wheels.	Width of Tire.	Size of Axles.	To carry a load of	Price per Pair with Axle.	
No.	Ft. In.	In. In.	In.	Cwts.	£ s. d.	£ s. d.
00	4 0	2 by $\frac{1}{2}$	2	20	6 15 0	5 10 0
0	4 6	$2\frac{1}{2}$,, $\frac{1}{2}$	2	20	7 10 0	6 0 0
$\frac{1}{2}$	4 6	$2\frac{1}{2}$,, $\frac{5}{8}$	$2\frac{1}{4}$	25	8 0 0	6 5 0
$\frac{3}{4}$	4 6	4 ,, $\frac{1}{2}$	$2\frac{1}{4}$	25	8 10 0	6 15 0
$\frac{7}{8}$	4 6	$4\frac{1}{2}$,, $\frac{1}{2}$	$2\frac{1}{4}$	25	9 0 0	7 5 0
1	4 6	$2\frac{1}{2}$,, $\frac{3}{4}$	$2\frac{1}{2}$	30	8 10 0	6 10 0
$1\frac{1}{4}$	4 6	3 ,, $\frac{3}{4}$	$2\frac{1}{2}$	30	9 0 0	6 15 0
$1\frac{1}{2}$	4 6	4 ,, $\frac{5}{8}$	$2\frac{1}{2}$	30	9 10 0	7 5 0
2	4 6	$4\frac{1}{2}$,, $\frac{5}{8}$	$2\frac{1}{2}$	30	9 15 0	7 10 0
$2\frac{1}{4}$	4 9	$2\frac{1}{2}$,, $\frac{3}{4}$	$2\frac{1}{2}$	30	9 0 0	6 15 0
$2\frac{1}{2}$	4 9	$4\frac{1}{2}$,, $\frac{5}{8}$	$2\frac{1}{2}$	30	10 10 0	8 5 0

Prices per pair of Two-Horse Cart Wheels and Axles, for General Work.

Wheels and Axles with Wood or Iron Naves.						Wheels only with Wood Naves.
	Height of Wheels.	Width of Tire.	Size of Axles.	To carry a load of	Price per Pair, with Axle.	
No.	Ft. In.	In. In.	In.	Cwts.	£ s. d.	£ s. d.
3	4 9	3 by $\frac{3}{4}$	$2\frac{3}{4}$	40	10 10 0	7 15 0
$3\frac{1}{2}$	4 9	4 ,, $\frac{3}{4}$	$2\frac{3}{4}$	40	11 10 0	8 15 0
4	4 9	$4\frac{1}{2}$,, $\frac{3}{4}$	$2\frac{3}{4}$	40	12 0 0	9 5 0
5	4 9	6 ,, $\frac{3}{4}$	$2\frac{3}{4}$	40	14 0 0	11 5 0
6	4 9	$4\frac{1}{2}$,, $\frac{7}{8}$	3	60	13 10 0	10 5 0
7	4 9	6 ,, $\frac{7}{8}$	3	60	15 10 0	12 5 0

Prices of Wagon Wheels and Axles per set.

Wheels 4ft. 9in. and 3ft. 4in. high; tire $\frac{3}{4}$in. thick for 3 and 4 tons, and $\frac{7}{8}$in. for 6 tons.

Width of Tire.	To carry Three Tons.	To carry Four Tons.	To carry Six Tons.
In.	£ s. d.	£ s. d.	£ s. d.
2	16 0 0	— — —	— — —
$2\frac{1}{4}$	16 10 0	— — —	— — —
$2\frac{1}{2}$	17 0 0	19 0 0	— — —
$2\frac{3}{4}$	17 10 0	19 10 0	— — —
3	18 0 0	20 0 0	21 0 0
$3\frac{1}{2}$	18 15 0	20 15 0	21 15 0
4	19 10 0	21 10 0	22 10 0
$4\frac{1}{2}$	20 10 0	22 10 0	23 10 0
5	22 0 0	24 10 0	25 10 0
6	23 10 0	26 10 0	27 10 0

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CART WHEELS.

GENERAL PRICE LIST OF WHEELS AND AXLES.

Price per pair of Wheels to carry 20 cwt., with 2-inch Axles.

Height of Wheels.	SIZE OF TIRE.					
	2 by ½	2½ by ½	3 by ½	3½ by ½	4 by ½	4½ by ½
Ft. in.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.
2 6	5 15	6 0	6 10	6 15	7 0	7 5
3 0	6 0	6 10	6 15	7 0	7 5	7 10
3 6	6 10	6 15	7 0	7 5	7 10	7 15
4 0	6 15	7 0	7 5	7 10	7 15	8 0
4 6	7 5	7 10	7 15	8 0	8 5	8 10

Price per pair of Wheels to carry 25 cwt., with 2¼-inch Axles.

Height of Wheels.	SIZE OF TIRE.						
	2 by ⅝	2½ by ⅝	3½ by ½ 3 by ⅝	3½ by ⅝ 4 by ½	4½ by ½	5 by ½	6 by ½
Ft. In.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.
2 6	6 10	7 0	7 5	7 10	7 15	8 0	8 10
3 0	6 15	7 5	7 10	7 15	8 0	8 5	8 15
3 6	7 0	7 10	7 15	8 0	8 5	8 10	9 0
4 0	7 10	7 15	8 0	8 5	8 10	9 0	9 10
4 6	7 15	8 0	8 5	8 10	9 0	9 10	10 0
4 9	8 5	8 10	9 0	9 5	9 15	10 5	11 0
5 0	8 10	9 0	9 10	10 0	10 10	11 0	12 0

Price per pair of Wheels to carry 30 cwt., with 2½-inch Axles.

Height of Wheels.	SIZE OF TIRE.								
	2 by ¾	2¼ by ¾	2½ by ¾	2¾ by ¾	3½ by ⅝ 3 by ¾	3½ by ¾ 4 by ⅝	4½ by ⅝	5 by ⅝	6 by ⅝
Ft. in.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.
2 6	6 15	7 0	7 5	7 10	7 15	8 5	8 15	9 5	10 5
3 0	7 0	7 5	7 10	7 15	8 0	8 10	9 0	9 10	10 10
3 6	7 5	7 10	7 15	8 0	8 5	8 15	9 5	9 15	10 15
4 0	7 15	8 0	8 5	8 10	8 15	9 5	9 10	10 0	11 5
4 6	8 0	8 5	8 10	8 15	9 0	9 10	9 15	10 10	11 15
4 9	8 10	8 15	9 0	9 5	9 10	10 0	10 10	11 10	12 10
5 0	9 0	9 5	9 10	9 15	10 0	10 15	11 5	12 5	13 10

Price per pair of Wheels to carry 40 cwt., with 2¾-inch Axles.

Height of Wheels.	SIZE OF TIRE,						
	2½ by ⅞	3 by ⅞	3½ by ⅞	4 by ⅞	4½ by ⅞	5 by ⅞	6 by ⅞
Ft. In.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.
3 6	8 10	9 0	9 10	10 0	10 10	11 0	11 15
4 0	9 0	9 10	10 0	10 10	11 0	11 10	12 5
4 6	9 10	10 0	10 10	11 0	11 10	12 0	13 0
4 9	10 0	10 10	11 0	11 10	12 0	12 15	14 0
5 0	10 10	11 0	11 10	12 5	12 15	13 10	15 0

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CART WHEELS.

Price per pair of Wheels to carry 60 cwt., with 3 inch Axles.

Height of Wheels.	SIZE OF TIRE.											
	3 by $\frac{7}{8}$		3½ by $\frac{7}{8}$		4 by $\frac{7}{8}$		4½ by $\frac{7}{8}$		5 by $\frac{7}{8}$		6 by $\frac{7}{8}$	
Ft. In.	£	s.	£	s.	£	s.	£	s.	£	s.	£	s.
3 6	9	15	10	5	10	15	11	5	11	15	12	10
4 0	10	5	10	15	11	5	11	15	12	5	13	5
4 6	11	0	11	10	12	0	12	10	13	5	14	5
4 9	12	0	12	10	13	0	13	10	14	5	15	10
5 0	12	15	13	5	13	15	14	5	15	0	16	10

The Wheels can be made any other height if required.

Wheels up to 4ft. 6in. high have 12 spokes, above 4ft. 6in. 14 spokes.

For $\frac{1}{8}$in. extra thickness of tire, Wheels up to 4ft. 6in. high and 4½in. tires will be charged 5s. extra; above those sizes, 10s. extra per pair.

Patent Axles and Oil Boxes (for iron nave wheels) extra, £1 5s. per pair.

Any other size made to order.

Prices of Wheels per set, without Axles, for Portable Steam Engines and Machines,

With Iron Naves suitable for 2½in arms; tire $\frac{5}{8}$in. thick.

Width of Tire.	3ft. and 4ft. high.			3ft. 6in. and 4ft. 6in. high.		
In.	£	s.	d.	£	s.	d.
3½	13	0	0	13	10	0
4	14	0	0	14	10	0
4½	14	15	0	15	5	0
5	15	15	0	16	10	0
6	18	0	0	18	15	0

If made stronger for 2¾ Arms, and with ¾ Tire, £1 10s. per set more, and can be fitted with Screwed Caps for holding the Oil, at £1 10s. per set.

Axles for Cart and Wagon Wheels.

Manufactured in the first style of workmanship, from best Scrap Iron, and warranted to carry the weights stated on pages 45 and 46.

Price per Pair.

Size.	Axle only for Iron Nave Wheels.			Common Axle and Bushes.			Patent Axle with Oil Boxes and Brass Caps.		
In.	£	s.	d.	£	s.	d.	£	s.	d.
2	1	10	0	1	15	0	3	5	0
2¼	1	15	0	2	5	0	3	15	0
2½	2	5	0	2	15	0	4	5	0
2¾	2	15	0	3	5	0	4	15	0
3	3	5	0	3	15	0	5	5	0

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CANNISTERS.

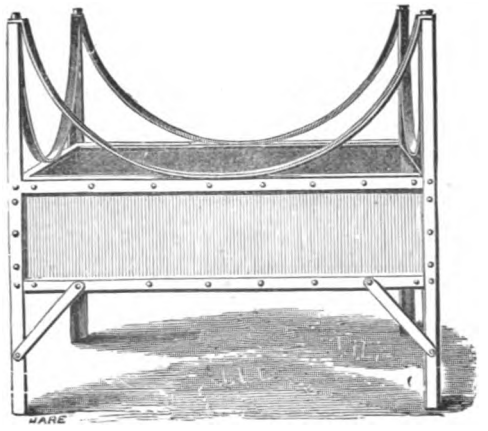
Sets of One Dozen Cannisters... ... ... from 5s. to 5s. 6d.

Sets of Six Cannisters ... ... from 6s. to 14s. 6d.

CASH BOXES.

Cash Boxes ... ... 5s. to 10s. 6d. each.

CATTLE CRIBS.



Improved Wrought Iron Cattle Cribs.

Open Corners, 4 feet square £2 15 0

Open Corners, 4½ feet square... ... ... £3 0 0

Closed Corners, 4½ feet square £3 5 0

Closed Corners, 5 feet square... ... ... £4 0 0

Closed Corners, 6 feet square... ... ... £4 10 0

Galvanized Iron, 10s. each extra.

If with Roof to Ditto, £2 extra. If with Racks for Hay, £2 extra.

If Mounted on Four Wheels for convenience of moving about 12s. 6d. extra.

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CENTRIFUGAL PUMPS.

Centrifugal Pump, No. 1, with Two Standards—to raise 120 Gallons of Water per minute £18 0 0

Foot Valve £2 extra.

Centrifugal Pump, No. 2, with Standard—to raise 250 Gallons of Water per minute £25 0 0

Foot Valve £3 5s. 0d. extra.

Six-inch Centrifugal Pump, No. 6, with Double Standards £22 0 0

Centrifugal Pump for Irrigation, No. 5, to discharge 1000 Gallons per minute, Price with Valves and Strainers £46 10 0

Table of Centrifugal Pumps suitable to Lift 80 feet.

Diameter of Discharge Pipe.	Gallons per Minute.	Horse Power to Lift Water One Foot. H.P.
1″	12 to 25	.0051
4″	200 to 300	.0782
6″	500 to 700	.202
9″	1000 to 1600	.411
12″	1800 to 2800	.801
15″	3000 to 4900	1.012
18″	4500 to 7000	1.811

Table of Centrifugal Pumps suitable to Lift 30 feet.

Diameter of Discharge Pipe.	Gallons per Minute.	Weight—Cwt.
10″	2000	16
12″	3000	20
15″	4000	30
18″	6000	40
20″	8000	60

Prices on Application.

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CENTRIFUGAL PUMPS.

Prices of Pumps and Foot Valves.

Diameter of Delivery Pipe. Inches.	Gallons per Minute.	Pump with One Standard and One Pulley.	EXTRAS. Pump with Two Standard.	Foot Valves extra.
		£ s. d.	£ s. d.	£ s. d.
3″	75	12 15 0	2 0 0	1 12 6
4″	200	16 0 0	2 10 0	2 5 0
6″	500	25 0 0	4 0 0	4 0 0
8″	800	34 0 0	5 0 0	5 10 0
10″	1500	36 0 0	5 10 0	6 10 0
12″	1800	49 0 0	8 0 0	8 10 0
15″	3000	78 0 0	12 0 0	12 0 0
18″	4500	100 0 0	15 0 0	16 0 0

WOODFORD'S CENTRIFUGAL PUMPS.

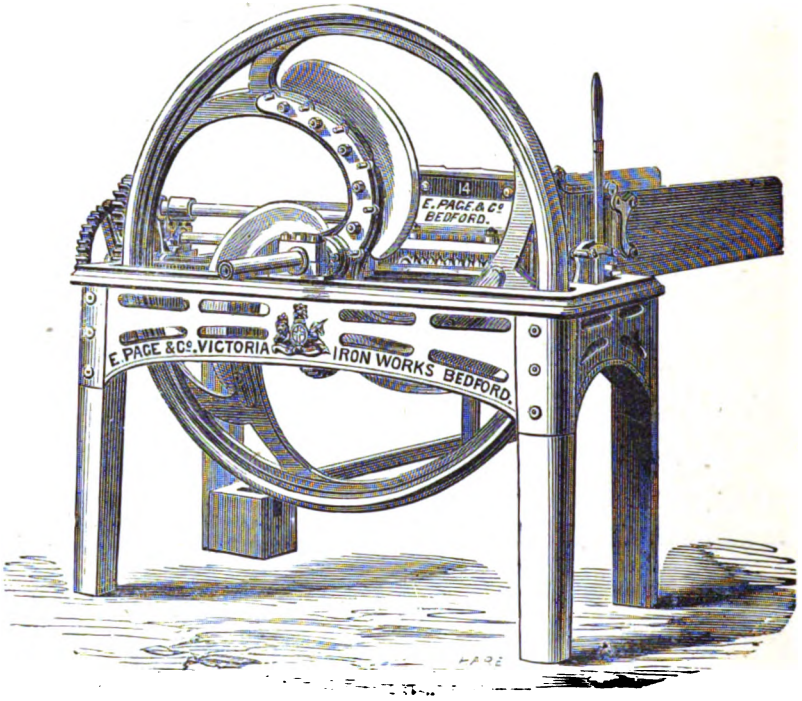
These Pumps are very suitable for Contractor's work, being easily fixed.

Diameter of Pipes. Inches.	Gallons per Minute.	To Lift 10 feet.	Extra for each 9 feet length of Framing, Shafting, &c.
		£ s. d.	£ s. d.
3¼″	500	42 10 0	9 0 0
4½″	1000	54 10 0	10 5 0
5⅝″	1500	66 10 0	12 12 0
6¼″	2000	85 0 0	13 10 0
8¼″	3000	121 0 0	15 5 0
10½″	5000	181 0 0	18 5 0

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E. PAGE & Co.'s

PATENT STEAM OR WATER POWER CHAFF CUTTER.



Marked Y 14, No. 18.

This is a first-class Machine, suitable for steam or water power, and is highly recommended. It has wooden legs, three knives, heavy fly-wheel, and stopping, forward, and reverse motions, and brass bearings.

Price £17 17 0

Cuts four lengths, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{7}{8}$. Mouth 14 inches wide.

Speed, 200 revolutions per minute.

Estimated Quantity cut per hour, 1 Ton 2 cwt.

Knives to fit this Machine are marked W. 1680.

17 inch Fast and Loose Pulleys, 15/- each extra.

This Chaff Cutter is especially adapted for exportation, being composed of few parts which pack in small compass and are not liable to breakage, the legs being of good stout wood, which are easily removed

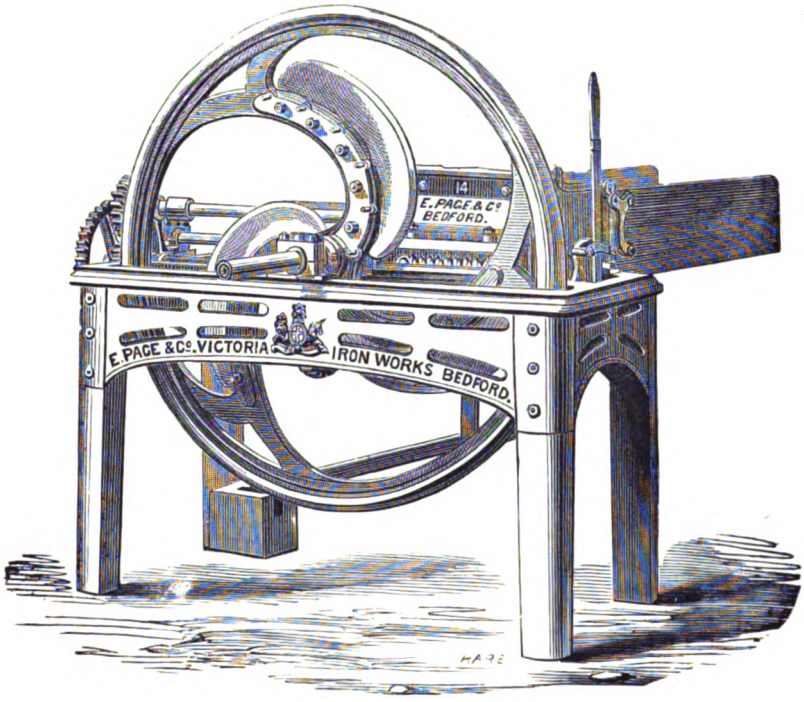
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E. PAGE & Co.'s

PATENT HORSE, STEAM, OR WATER POWER CHAFF CUTTER.

Marked Y 12, No. 17.

This Machine took the Head Prize at the Meeting of the Highland Agricultural Society of Scotland at Dumfries, and the Prize at Perth, and received a Special Commendation at the Royal Agricultural Society's Meeting at Bury St. Edmund's.



The framework is of very strong cast iron, firmly secured to wooden legs, and proportionately strengthened for very heavy work. It is fitted with three knives attached to a massive fly wheel, and has a rising Mouthpiece 12 inches wide. The whole possesses immense strength, and is with confidence fully recommended. It has also stopping, forward, and reverse motions.

Cuts four lengths, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{7}{8}$, inch.

No. 17, with stopping, forward, and reverse motions, 12″ mouthpiece £14 14 0

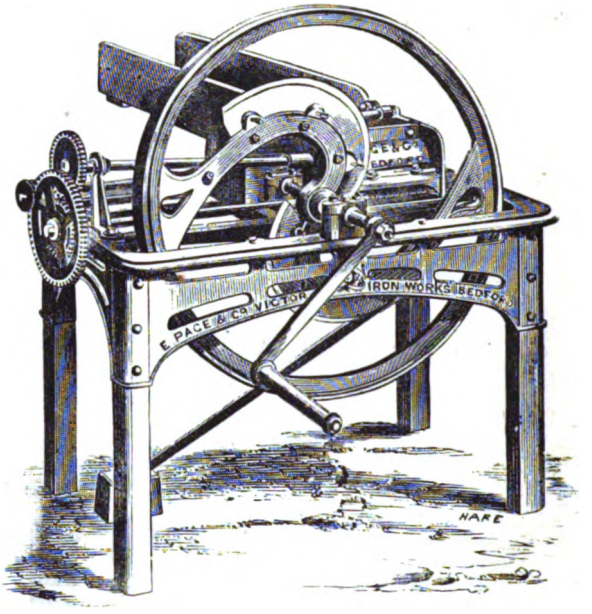
No. 15, with stopping, forward, and reverse motions, 10″ mouthpiece £11 11 0

No. 14, with stopping, forward, and reverse motions, 9″ mouthpiece £8 0 0

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E. PAGE & Co.'s IMPROVED HAND POWER

CHAFF CUTTERS.



The Machines all have rising Mouthpieces, and are easily worked by one man or a lad, according to the size of the Machine. The fly-wheels are fitted inside the frame.

No. 12½, to cut two lengths, ¼ and ⅜ inch,	mouth 8 inches wide	£6	6 0
No. 12, „ „	mouth 8½ inches wide	£5	10 0
No. 11, „	mouth 8 inches wide	£4	10 0

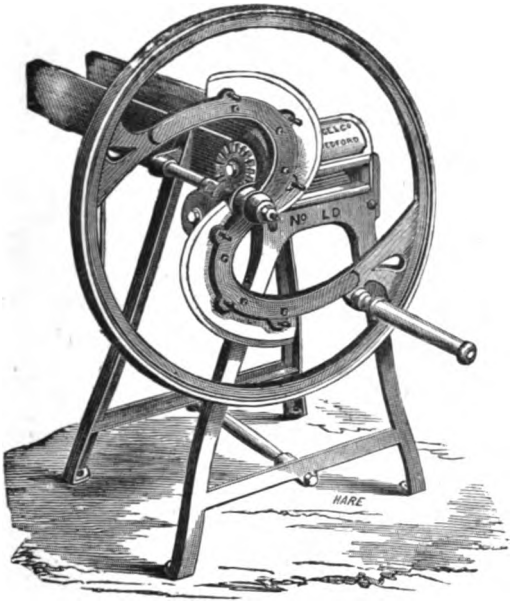
E. PAGE & Co.,

Victoria Iron Works, Bedford.

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E. PAGE & Co.'s

IMPROVED CHAFF CUTTERS.



Mark No. 10. 8-inch fixed Mouth. Fluted Rollers.

Cuts one length $\frac{5}{16}$ of an inch.

This is a small and durable Machine, specially adapted to the requirements of a Gentleman's Stable where only one or two horses are kept; specially adapted for export, as it can be taken to pieces and packed in a small compass.

Price... ... ... £2 10 0

Mark No. 9. 7-inch fixed Mouth. Toothed Rollers.

Cuts one length $\frac{1}{4}$ of an inch.

This is a small and well made Machine.—Possesses same advantages as above.

Price... ... ... £2 8 0

Mark No. 9 A. 7-inch fixed Mouth.

Cuts two lengths, $\frac{1}{4}$ and $\frac{3}{8}$ of an inch.

This is an admirable Machine for general use, and is made especially to meet a great want in small Chaff Cutters, viz.—*two lengths without removing a knife.*

Price... ... ... £2 12 6

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PICKSLEY SIMS'
CHAFF CUTTERS.

No. 4 Chaff Cutter.

A very strong and serviceable Machine, for hand, horse, water or steam power. It is provided with patent **forward, stop, and reverse motion gearing,** and cuts **two lengths** of chaff without change of wheels, by means of a sliding pinion. The fly-wheel shaft works in brass bearings, the whole of the gearing is neatly covered in, and it is in every respect a good and well finished Machine. Rising mouth, 9½in. wide. Two knives.

Price **£8 10 0**

No. 4x Chaff Cutter

Is similar to No. 4, but with the addition of the patent **clutch gear** (in lieu of the sliding pinion), whereby the cut may be altered in length without stopping the Machine. Two knives.

Price **£9 0 0**

No. 5 Chaff Cutter

Is similar to No. 4, but larger and stronger. Rising mouth, 10½in. wide. Two knives.

Price **£10 0 0**

No. 5x Chaff Cutter

Is the same size as No. 5, but is fitted with the patent **clutch gear** in lieu of the sliding pinion. Two knives.

Price **£10 12 6**

No 6xl Royal Oxford Prize Chaff Cutter.

At the Royal Agricultural Society's trials held at Oxford, July, 1870, this Machine was awarded the Prize of £5 in competition with the Machines of Eighteen of the leading Makers. Quantity cut, 217lbs. of ⅜in. chaff in five minutes. The **First Prize,** Gold Medal, was also awarded to this Machine at the East Lothian Society's trials, held at Haddington, July, 1874. The Machine is fitted with a heavy fly-wheel and three knives, and combines all the latest improvements. Rising mouth, 14in. wide.

Price **£16 10 0**

No. 7x Chaff Cutter

Is similar to No. 6xl, but much larger. It is a very substantial Machine, and calculated to cut nearly two tons of hay or straw per hour. The fly-wheel is fitted with two knives. Rising mouth, 15in. wide.

Price **£19 15 0**

No. 7b Chaff Cutter

Is similar to No. 7x, but is fitted with two sets of the Patent Clutch Gear, and will cut four lengths without stopping the Machine.

Price **£21 0 0**

Nos. 7x or 7b can be fitted with a heavier fly-wheel and three knives, at an extra cost of **£1 0 0**

Pulleys or Change Wheels charged extra.

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PICKSLEY SIMS'

CHAFF CUTTERS.

D.J. New Patent Chaff Cutter

Contains all the latest improvements. It is fitted with a sliding pinion for altering the length of cut without change of wheels, and with Patent stop, forward, and reverse motion gear. Rising mouth, 9½in. wide.

Price... ... ... £7 2 6

D.J. New Patent Chaff Cutter,

Fitted with Patent Clutch Gear, in lieu of the sliding pinion, for altering the length of cut when the Machine is in rapid motion.

Price... ... ... £7 7 6

D.J. Fitted with auxiliary handle—Extra to the above prices, 10s.

D.K. New Patent Chaff Cutter,

With fly-wheel inside frame, cuts two lengths of chaff—⅜in. and ¾in. Rising mouth, 9¼in. wide.

Price... ... ... £6 0 0

D.K. If fitted with an auxiliary handle, extra, 10s.

D.H. New Patent Chaff Cutter

Is fitted with **improved** Patent Double-cut Motion Gear, Patent Recessed Side Plates, the improved Solid Rollers, a large Fly-wheel, and it is adapted to cut two lengths of chaff—⅜in. and ¾in. *The most complete and perfect Machine in the market.* Rising mouth, 9¼in. wide.

Price... ... ... £4 0 0

D.H. If fitted with an auxiliary handle—extra 7s. 6d.

D.H. New Patent Chaff Cutter fitted with an extra large fly-wheel ... ...Price £4 5 0

D.G.A. New Patent Chaff Cutter

Is a similar Machine to the "D.G." but it is adapted to cut two lengths of chaff—$\frac{5}{16}$in. and ⅝in. Rising mouth, 8in. wide.

Price £3 0 0

D.G. New Patent Chaff Cutter

Is fitted with New Patent Recessed Side Plates, Improved Solid Rollers, and massive fly-wheel. The feed is regulated by strong spiral springs, in lieu of the ordinary weight and its appendages, Rising mouth, 8in. wide.

Price... ... ... £2 12 6

D. New Chaff Cutter,

Cuts one length. Mouth 8in. wide. .. .. Price £2 7 6

D.O. New Chaff Cutter,

Cuts one length. Mouth 7¼in. wide. ... ... Price £2 5 0

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MAYNARD'S

PATENT PORTABLE COMBINED STEAM POWER CHAFF ENGINES.

These now well-known Engines are especially adapted for ready attachment to a Portable Steam Engine, being quickly set into position for work, requiring no fixing, and no special Pulley on the Steam Engine, the driving strap being led direct from the fly wheel in the same manner as to a Thrashing Machine; or the Chaff Engine may be used in connection with a Thrashing Machine by placing it at the end of the shakers, and driving it by a strap from the drum, when the straw falling into the Chaff Engine is cut as fast as it can be thrashed into short chaff, riddled from the cavings and dust, and elevated into bags.

They are easily conveyed by one horse from farm to farm, being mounted on wheels, on which they remain while at work; they cut three lengths (three-sixteenths, three-eighths, and one inch); the three-sixteenths Chaff is very fine and regular—an important property when Chaff is required for storage, as practised in the Eastern Counties of England—and the cavings and dust being sifted out, it is delivered into bags in a fit state for storage and fermentation with great rapidity, and through the Patented labour-saving parts combined in these Chaff Engines, at small cost.

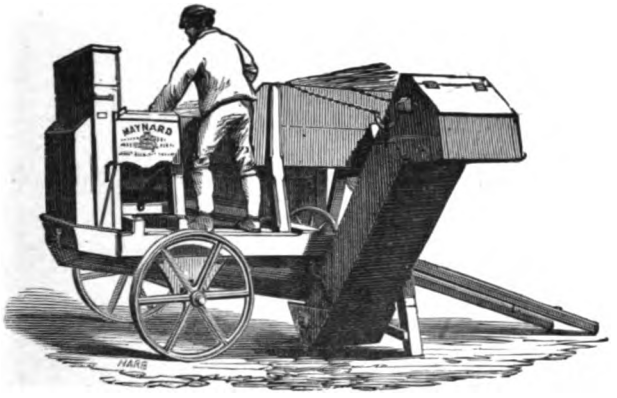
Two Knife Wheels (each furnished with a set of knives) accompany each Engine, if required, so that one set of knives may be sharpened, without removing them from the wheel, by the attendant of the Steam Engine, while the other is at work, and by provision for that purpose, they may be changed in from one to two minutes.

These Chaff Engines are protected by several Patents, and an important improvement has lately been effected and Patented, which is embodied in all the Chaff Engines which are now being sent from these Works, and which can at small cost be added to others previously made, by which the labour of the feeder is reduced, and his immunity from the appalling accidents which have befallen the feeders of some power cutters, by the entanglement of their hands between the rollers, secured. The choking of the machine is almost wholly obviated.

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MAYNARD'S No 6

COMBINED CUTTING, SIFTING, AND BAGGING CHAFF ENGINE,



Which is fitted with five knives, is believed to exceed in rapidity of work any other ever previously brought before the public, being able to cut straw to chaff as fast as the most Powerful Steam Thrashing Machine can supply it. It sifts out the cavings or imperfectly cut straw, sifts out the dust and deposits the chaff into bags, in a fit condition for storage.

It was awarded the Special Prize of the Royal Agricultural Society of England, at the Oxford Show, for its **peculiar and efficient capabilities and excellence of work.**

Price £48 0 0
Extra Knife Wheel, *with 5 Knives and Fittings* £3 12 0

The No. 7

COMBINED CUTTING, SIFTING, AND BAGGING CHAFF ENGINE

Is in principle similar to the No. 6 Chaff Engine, but is fitted with four knives only, and will cut not quite so fast as straw can be thrashed.

Price £45 0 0
Extra Knife Wheel, *with 4 Knives and Fittings* £3 5 0

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The No. 4

STEAM POWER SIFTING CHAFF ENGINE

Is fitted with four Knives, and will cut and sift at the same pace as the No. 7, but it does not bag the Chaff.

Price £40 0 0

Extra Knife Wheel, *with* 4 *Knives and Fittings* £3 5 0

The No. 8.

THE "MAMMOTH" COMBINED CUTTING, SIFTING, AND BAGGING CHAFF ENGINE.

This newly arranged machine contains all former and recently patented improvements, and is a most powerful and efficient Cutter, being furnished with six knives, and a wide mouthpiece, and is very suitable for using in combination with a Steam Thrashing Machine, it being quite capable of cutting to shortest (3-16th) length as fast as the machine when fully fed can supply the straw.

Price £52 0 0

Extra Knife Wheel, *with* 6 *Knives and Fittings* £4 0 0

For meeting the requirements of such as cut hay almost exclusively, a further improvement has been made in the No. 6 & 7 Chaff Engines by the addition of a

MAYNARD'S CAVING ELEVATOR,

By this the cavings are carried up and deposited at the elbow of the feeder, and so continuously passing through the mouth with the fresh supply, are cut up with it into Chaff.

The Extra Cost is £6 6 0

GRINDSTONE:

As attached to Nos. 4, 5, 6, 7, or 8 Chaff Engine, extra £3 5 0

TARPAULING COVER

For a Chaff Engine £1 8 0

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WOODS, COCKSEDGE, AND Co.'s

CHAFF CUTTERS.

THE NO. 30B AND 20B CHAFF CUTTER

Are fitted with strong Iron Frames—well and simply constructed—cutting $\frac{3}{8}$ and $\frac{3}{4}$ chaff without changing the wheels. They are fitted with stop motion so arranged that an accident to the feeder is impossible. The cog wheels are all protected with neat covers.

No. 30B—For Horse or Steam Power—12″ mouth	£13 13 0
If fitted with three Knives...	£14 14 0
No. 20B—For Horse Power or Two Men—9″ mouth...	£8 0 0
If fitted with three Knives...	£9 0 0
W.C.—With rising mouth 8″ wide—2 lengths	£3 17 6
If with extra large Fly-wheel	£4 2 6
If with large Wheel and Hollow Knives	£4 5 0
No. 26—Has rising mouth 8″ wide—fitted with spiral springs—cuts two lengths by reversing one wheel	£3 2 6
If with extra large Fly-wheel	£3 7 6
If with large Wheel and Hollow Knives...	£3 10 0
No. 25— Has rising mouth 8″ wide—fitted with spiral springs	£2 10 0
If with extra large Fly-wheel	£2 15 0
If with large Wheel and Hollow Knife	£2 17 6
No. 19—With fixed mouth 7½″ wide	£2 5 0
If with extra large Fly-wheel	£2 10 0

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DESCRIPTIVE LIST OF BENTALL & Co.'s
CHAFF CUTTERS.

MARK.	PRICES. £ s. d.	1	2	3	4	5	6	7	8 bus.	9 cwt.	10 cwt.	11	12	13	14	15	16
C.P.A.	2 2 0	7⅛	2½	2	2	1	—	—	10	—	—	—	—	—	—	—	1
C.C.X.	2 5 0	7¼	2¼	2	2	1	—	—	10	—	—	—	—	—	—	—	1
C.D.A.	2 5 0	7⅜	2½	2	2	1	—	—	10	—	—	—	—	—	—	—	1
C.S.A.	2 10 0	7¾	2¾	2	2	1	—	—	14	—	—	—	—	—	—	—	9
C.S.B.	2 15 0	8¼	2¾	2	2	1	—	—	15	—	—	—	—	—	—	—	2
C.S.B. with large fly wheel	3 0 0	8¼	2¾	2	2	1	—	—	15	—	—	—	—	—	—	—	2
C.D.Z.	3 5 0	8¼	3	2	2	1	—	—	16	—	—	—	—	—	—	C	2
C.D.Z. with large fly wheel	3 10 0	8¼	3	2	2	1	—	—	16	—	—	—	—	—	—	C	2
C.D.C.	3 15 0	8¼	3¼	2	2	1	—	—	20	—	—	—	—	—	—	C	2
C.D.C. with large fly wheel	4 0 0	8¼	3¼	2	2	1	—	—	20	—	—	—	—	—	—	C	2
C.M.C.	3 18 0	8¼	3¼	2	2	1	—	—	20	—	—	—	—	—	—	C	2
C.M.C. with large fly wheel	4 3 0	8¼	3¼	2	2	1	—	—	20	—	—	—	—	—	—	C	2
C.D.V.	3 15 0	8¼	3¼	2	2	1	—	—	20	—	—	—	—	—	—	—	2
C.D.V. with large fly wheel	4 0 0	8¼	3¼	2	2	1	—	—	20	—	—	—	—	—	—	C	2
C.D.T.	4 5 0	9¼	3½	2	2	1	—	—	23	—	—	—	—	—	—	C	3
C.D.B.	4 5 0	8¼	3¼	2	2	1	—	—	20	—	—	—	—	H	—	C	2
C.E.B.	4 15 0	9¼	3¼	2	2	1	—	—	25	—	—	—	R	H	—	C	3
C.D.D.	5 5 0	9¼	3½	3	2	2	—	—	30	—	—	—	—	—	O	C	3
C.E.D.	5 15 0	9¼	3½	3	2	2	—	—	30	—	—	—	R	H	—	C	3
C.S.D.	6 6 0	10	3½	3	2	2	—	—	30	—	—	—	R	H	—	C	7
C.D.E.	6 6 0	9¼	3½	3	2	2	120	—	30	6	—	S	—	—	O	C	3
C.E.E.	6 16 6	9¼	3½	3	2	2	120	—	30	6	—	S	R	H	—	C	3
C.S.E.	7 7 0	10	3½	3	2	2	120	—	30	6	—	S	R	H	—	C	7
C.D.H.	7 7 0	9¼	3½	3	3	2	120	150	—	8	9	S	—	—	O	C	3
C.E.H.	7 17 6	9¼	3½	3	3	2	120	150	—	8	9	S	R	H	—	C	3
C.S.H.	8 10 0	10	3½	3	3	2	120	150	—	8	9	S	R	H	—	C	7
C.D.I.	8 10 0	11¼	3¾	3	2	2	120	150	—	8	10	S	—	—	O	C	4
C.E.I.	9 0 0	11¼	3¾	3	2	2	120	150	—	8	10	S	R	H	—	C	4
C.S.I.	9 15 0	12	3½	3	2	—	120	200	—	9	12	S	R	H	—	C	8
C.D.K.	9 15 0	11¼	3¾	3	3	—	—	200	—	10	14	S	—	—	O	C	4
C.E.K.	10 5 0	11¼	3¾	3	3	—	—	200	—	10	14	S	R	H	—	C	4
C.S.K.	10 15 0	12	3½	3	3	—	—	200	—	—	16	S	R	H	—	C	8
C.D.S.	11 11 0	13¼	4	3	2	—	120	200	—	12	16	S	—	—	O	C	5
C.D.P.	12 12 0	13¼	4	3	3	—	—	200	—	—	20	S	—	—	O	C	5
C.E.R.	14 14 0	15¼	4	3	3	—	—	250	—	—	25	S	R	H	—	C	6

EXPLANATION OF ABOVE TABLE.

Column No. 1—The figures show the width of each mouthpiece in inches.
" 2— " give the thickness each Machine will cut.
" 3— " give the number of lengths each Machine will cut.
" 4— " give the number of knives each Machine has.
" 5— " give the number of handles sent with each Machine.
" 6— " give the speed recommended per minute by horse power.
" 7— " give the speed recommended per minute by steam power.
" 8— " give the estimated quantities in bushels cut by hand per hour.
" 9— " give the estimated quantities in cwts. cut by horse power per hour.
" 10— " give the estimated quantities in cwts. cut by steam power per hour.
" 11—The letter S denotes the Machines fitted with stop and reverse motions.
" 12— " R denotes the Machines with round ended frames.
" 13— " H denotes the Machines fitted with heavy fly-wheels.
" 14— " O denotes the Machines fitted with oval rim fly-wheels.
" 15— " C denotes the Machines fitted with all the cog wheels covered.
" 16—The figures show the number of knife that fits each Machine.

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CHAIN PUMPS.

THE SIMPLEST, CHEAPEST, AND MOST USEFUL PUMPS IN USE.

THE SMALLER SIZES FOR

BREWERIES, ORDINARY WELLS, URINE TANKS, &c.

THE LARGEST SIZES FOR

IRRIGATION, COAL PITS, QUARRIES, HARBOUR, AND BRIDGE WORKS,

For every purpose where the Lift is perpendicular they cannot be surpassed.

These Pumps are constructed with an endless Chain and Discs, revolving round a Wheel placed in a Cast-iron Top, passing down into the Well or Tank, and up through a Wood or Iron Tube. The simplicity of their construction, the ease with which they can be fitted up, and the amount of work they will perform with the small power required, have made them highly esteemed.

There is no Pump working Vertical Lifts that will lift, with the same amount of power, half the quantity of water the Chain Pump will do. Having no Valves or complications that are likely to get choked or go wrong, they are of immense advantage for working in Urine Tanks, or in any place where there is dirty liquid, as they will lift Sand, Mud, Sticks, Straws, Tree Leaves, and other foreign matter without getting choked.

No. 1

Is the smallest size of Hand-Power Chain Pump, the Cheapest and most suitable for Urine Tanks, Ordinary Wells, &c.

For Hand-Power Pumps, Wooden Tubing is recommended in preference to Iron, as the Pump works much lighter, and the discs last longer. 2½in. pipe is recommended to be used up to 15ft. deep, the medium size up to 25ft., and the smallest size above 25ft.

PRICES:—

	Wood Tubing.
10 feet Lift	£3 15 0
Every foot of extra Lift, 2½in.	£0 3 0
Do. Medium and Smallest Size	£0 2 6

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CHAIN PUMPS.

No. 2

Is of similar construction, but a stronger-cased Pump, with Malleable Iron Axles and Brass Bushes, and an improved form of Chain. This is the most suitable Hand-power Pump for sending abroad, as it is very durable and is less liable to accidents, a point of importance where it is expensive to replace parts.

PRICE:—

	Wood Tubing.	Iron Tubing.
10 feet Lift	£6 15 0	£7 5 0
Every foot of Extra Lift, 2½in.	£0 5 0	£0 6 0
Do. Medium and Smallest Size...	£0 4 0	£0 5 0

No. 1 and 2 can be mounted on Cast-iron Tank, suitable for showing the working of the Pump in Implement Agents' and Merchants' Warerooms.

No. 3

Is an entirely new and different class of Pump, got up in a very superior style. The Smallest size may be worked by Hand, but it is more suitable for Horse, Cattle, or other power. The Top Gearing is simple and powerful. The Chain is specially prepared and fitted with India Rubber Discs. The Iron Piping is bored out in chambers to suit the new Chain and Discs, which reduces the wear and friction very considerably.

This class of Pumps will be found the cheapest, most powerful, and the most durable that are made.

PRICE:—

Diameter of Pumps	2½in.	3in.	4½in.	6in.
No. of Gallons they lift per Hour	2000	3000	7000	13,000
Power required to lift 10 feet	1 Donkey.	1 Mule.	1 Horse.	2 Horses.
Price of Top Gearing...	£8	£13	£22	£30
Price per foot of Lift...	8s.	10s.	12s.	21s.
Horse Gear up to 50 feet of Lift and connections	£8 8s.	£14	£27 10s.	£37 10s.

Stronger Top Gearing and Chain are required when the Lift exceeds 50 feet. Five per cent. is added to these prices for every additional 50 feet or part of 50 feet of Lift.

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CHAIN PUMPS

WITH HORSE GEAR.

In this arrangement the Horse Gear is fitted immediately over the source whence the water is to be drawn—entirely dispensing with all intermediate Gearing—and rendering the whole arrangement very simple and effective.

For coal pits, quarries, lifting sewage or water for irrigation, this Pump will be found very cheap, powerful, and durable, and the simplicity of construction renders it impossible to get out of order.

This Pump does not require charging, and can be made of any size, to lift any quantity of water, and can be driven with cattle or horses as may be desired.

Size of Pump in inches.	Approx. No. of Gallons per Hour.	Power required to lift 9 feet.	Decimal of H.P. required for every extra Yard of Lift.	Price for 9 Feet Lift.	Price for every extra Foot of Lift.	No. of Horse Gear.	Prices of the different Horse Gear.
				£ s. d.	s. d.		£ s. d.
3	4,100	1 Donkey.	.10	21 15 0	12 9	1	7 7 0
4½	9,200	1 Mule.	.22	26 15 0	18 0	2	9 0 0
		1 Horse.				3	13 10 0
6	16,500	2 Light Horses	.40	44 15 0	31 0	4	16 0 0
7½	25,500	2 Horses.	.60	59 10 0	36 0	5	17 17 0
9	38,000	3 Horses.	.90	68 0 0	47 0	6	23 10 0
10½	50,000	4 Horses.	1.2	76 10 0	62 0	7	30 0 0
12	65,000	5 Horses.	1.6	93 10 0	74 0	8	38 0 0

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CORNES'S

IMPROVED FIRST PRIZE COMPOUND LEVER DOUBLE CHAMBER CHEESE PRESSES.

These celebrated Cheese Presses are of world wide reputation, and may be found in almost all the large Daries in this country, as well as in many others abroad, and are looked upon as special favourites wherever they are used.

They admit **two thick Cheeses** which are pressed in **separate compartments** while **several thin Cheeses** may be applied therein. By the adjustable compound lever arrangements **any required weight** can be obtained, and when once the press is set (which is very easily accomplished) the pressure is continuous, and does not diminish, as the Cheese sink by depression, and what is of great importance a **perfectly level pressure** is given on the surface of the Cheese. The **Screw** is of **extra strength** and the nut through which it passes is of best antifriction metal, and in lieu of the cast iron lever bars and joints as formerly applied, malleable ones are now used, and a new **regulating arrangement** is introduced by which several degrees of pressure can be obtained.

Prices complete with Painted Standards.

No. 1, 20″ wide between Standards	£5 7 6
No. 2, 22″ „ „	£5 17 6
No. 3, 24″ „ „	£6 5 0

If with Bright instead of Painted Standards 7s. 6d. extra.

Fitted with Double Shooter Board 5s. extra. Drip Cup 2s. 6d. extra.

CORNES'S

IMPROVED FIRST PRIZE COMPOUND LEVER SINGLE CHAMBER CHEESE PRESSES.

Prices complete with Painted Standards.

No. 1.—Single Cheese Press, 20″ wide between Standards...	£3 7 6
No. 2.— „ „ „ 22″ „ „	£3 12 6
No. 3.— „ „ „ 24″ „ „	£4 0 0

If with Turned instead of Painted Standards, 3s. 6d. extra.

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HATHAWAY'S

IMPROVED PRIZE BARREL CHURNS.

Are extensively used at the large establishments carried on by the Aylesbury Dairy Co., and the Cheese Factories in Derbyshire.

These Churns are constructed on the latest and most approved principles. The **Beaters** are constructed on the "Archimedean" principle, by which increased agitation is given to the cream in churning, and a much larger quantity of Butter produced. The **Stopper** forms a most convenient and effective fastening, it is water-tight and has only to be tried to supersede all those previously in use.

The Cream can be put in and the Butter taken out of the Churn with the greatest ease, and the Churn can be **readily cleaned** in a few seconds. Each Churn is made to revolve on anti-friction rollers by which a great saving of labour is effected. No friction from iron or brass in the interior to injure or taint the Butter. Special attention is given to the workmanship, and the best materials and fittings only are used, and a superior finish is given to each Churn.

A great improvement has recently been made by adding a **metallic mouth** or bush, which prevents the wood-work from becoming displaced by swelling or changes of temperature, and thus adapts these Churns for use in any country. The metallic mouth also secures an excellent fit and bearing for the stopper.

These Churns are adapted for Churning Milk as well as Cream, and larger sizes can be fitted up for steam, horse, or water power.

No. 0.—	To Churn from	½lb.	to	6lbs.	of Butter,	on bearings and low stand for a table	£2	10	0
No. 00.—	,,	½	,,	9	,,	on bearings and high stand	£3	0	0
No. 1.—	,,	½	,,	12	,,	on antifriction rollers and high stand...	£3	10	0
No. 2.—	,,	½	,,	20	,,	,, ,, ,, ...	£4	5	0
No. 3.—	,,	1	,,	35	,,	,, ,, ,, ...	£5	0	0
No. 4.—	,,	1	,,	55	,,	,, ,, ,, ...	£5	10	0
No. 5.—	,,	2	,,	85	,,	,, ,, ,, ...	£6	11	0
No. 6.—	,,	3	,,	112	,,	,, ,, ,, ...	£6	17	0
No. 7.—	,,	3	,,	140	,,	,, ,, ,, ...	£7	12	0

Metallic mouth to No. 4, 5, 6, or 7, 5s. extra.

TINKLER'S PATENT BARREL CHURNS.

No. 3D.—	To make from	2lbs.	to	30lbs.	of Butter,	with Napier Dashers	£5	10	0
No. 8I.—	To churn from	3	to	40	gallons, or	6 to 140lbs of Butter, with Diagonal Dashers	£9	10	0
No. 0. —	To churn from	¼lb.	to	6lbs.	of Butter,	on low stand, with Napier Dashers ...	£2	10	0
No. 0A.—	,,	½	,,	10	,,	with Napier Dashers	£4	0	0
No. 1B.—	,,	1	,,	15	,,	with Napier or Diagonal Dashers ...	£4	10	0
No. 2C.—	,,	1	,,	25	,,	,, ,, ,, ...	£5	0	0
No. 3D.—	,,	2	,,	30	,,	with Diagonal Dashers	£5	10	0
No. 6G.—	,,	2	,,	80	,,	with Napier Dashers	£7	0	0

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CHURNS.

ALWAYS "EQUABLE" BARREL CHURN

Made of Tin, with compartments for hot or cold water, to regulate the temperature, to make 2lbs. to 20lbs. £4 0 0

EQUABLE BARREL CHURN

To make 40lbs. of Butter £4 15 0

ROYAL BARREL CHURN

To make 20lbs. of Butter, with two compartments £5 5 0

LONDON BUTTER CHURN

Made of Tin, with Wood Beaters and compartment for hot or cold water, to make 12lbs. of Butter £1 16 0

LONDON BUTTER CHURN

As above, to make 7lbs. of Butter... ... ... £1 12 0
As above, to make 4lbs of Butter... ... ... £1 7 0

SUSSEX BUTTER CHURN

With Tin Beaters, to make 2lbs. of Butter £0 18 0
With Tin Beaters, to make 4lbs. of Butter £1 2 0
With Tin Beaters, to make 7lbs. of Butter £1 7 0

MECHANICAL BUTTER WORKER

Capable of making 25lbs. of Butter £1 15 0

ATMOSPHERIC CHURN

To make Butter from sweet milk in ten minutes, or from cream in five minutes £0 18 0

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DENING'S

CIDER MILLS.

This Mill is adapted for grinding Apples in a superior manner, crushing the pips and bruising the Apples to a fine pulp, with great speed and very little power. The Apples are first broken by passing between the improved iron rollers, and pulped by passing between granite rollers beneath. It can be worked by hand or power.

Price, No. 1 ... ... £17 0 0

Price, No. 2 ... ... £15 0 0

Extra for Pulley Wheel ... ... £ 0 10 0

Extra for Wheels for moving ... ... £ 0 15 0

As Apple Mills are only required at a certain part of the year, the Mill is arranged so as to make it useful for bruising all kinds of grain, such as Barley, Beans, Oats, &c.; this is done by taking off the Apple Bin and putting in its place an effective Corn Feeding Apparatus.

Extra for Ditto £2 0 0

To this Mill was awarded the Bath and West of England Society's Medal at the Yeovil Meeting; also the Local Prize at the Barnstaple Meeting.

No. 3 Mill, with Iron Rollers working in Brasses, with Trough and Bin complete £8 10 0

CIDER PRESSES.

Double Geared Screw Cider Press

With Double Screws 3″ diameter—which keep the follower quite level, by which means additional power is gained—Size of bed, 4ft. 9in. square... ... ... £28 0 0

Iron Work only, viz., Set of Screws, Nuts, Gearing, Wrought Iron Sides, Keys, and Washers for Press £19 10 0

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CIDER PRESSES, &C.

DOUBLE SCREW CIDER PRESS,

Fitted with Best Wrought Iron Screws, Nuts, Levers, &c.

SIZES AND PRICES AS UNDER.

Diameter of Screws.	Length of Screws.	Size of Bed.	Price.
2½ inches	7 feet 6 inches	4 feet 0 inches	£15 0 0
2¾ „	7 „ 6 „	4 „ 6 „	£17 0 0
3 „	8 „ 0 „	4 „ 9 „	£19 0 0
3¼ „	8 „ 0 „	4 „ 10 „	£21 0 0

SINGLE SCREW CIDER PRESS.

SIZES AND PRICES AS UNDER.

Diameter of Screws.	Height between Head and Bottom.	Size of Bed.	Price.
3 inches	5 feet 0 inches	4 feet 3 inches	£16 0 0
3½ „	5 „ 6 „	4 „ 6 „	£20 0 0
4 „	5 „ 9 „	4 „ 9 „	£23 10 0

PORTABLE COMBINED CIDER PRESS & MILL.

Fitted with Carriage, Shafts, and Travelling Wheels.

If with No. 1 Double Roller Mill	£48 0 0
If with No. 2 Mill	£46 0 0

CIDER SCREWS, WITH NUTS, COLLARS, &c.

Are supplied to persons wishing to fit up their own Presses, at the following Prices :—

DOUBLE CIDER SCREWS.

Diameter.	Length.	Price.
2⅛ inches	7 feet 6 inches	£7 10 0
2¼ „	7 „ 6 „	£8 10 0
3 „	8 „ 0 „	£10 0 0
3¼ „	8 „ 0 „	£11 0 0

SINGLE CIDER SCREWS.

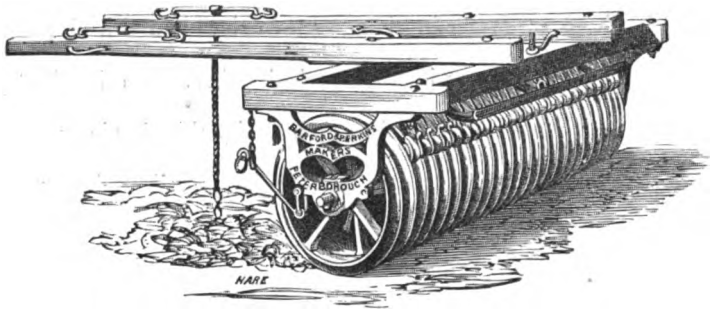
Size of Screws.	Size of Sides.	Price Complete.	Price of Screw and Nut only.
3 inches	2 inches	£10 0 0	£4 15 0
3½ „	2¼ „	£13 0 0	£6 5 0
4 „	2½ „	£16 0 0	£8 0 0

Two Wrought Iron Levers for the above £1 10 0

Right and left hand Screw, with Nuts, Eyes, and Levers,—2½ inch Screw £5 15 0

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BARFORD & PERKINS'
IMPROVED PATTERN CAMBRIDGE CLOD CRUSHER AND LAND ROLLER.



	Prices 6½ feet wide with 25 rings. £ s. d.	Prices 7 feet wide with 27 rings £ s. d.
16 inches diameter	9 10 0	10 0 0
20 ditto	10 10 0	11 0 0
24 ditto	12 0 0	12 10 0
26 ditto	13 0 0	14 0 0
30 ditto	16 10 0	17 10 0
36 ditto	22 0 0	23 10 0

If fitted with Stanley's Patent Self-acting Scrapers, as shewn in engraving, 6½ feet, £2 5s. 0d. per set extra. 7 feet, £2 10s. extra. If with Double Shafts, £1 extra. If with Seat for Driver, £1 extra.

Any of the above sizes can be made from 5 to 6 feet wide, to suit purchasers and special quotations given on application.

BARFORD & PERKINS'
ROYAL LEICESTER PRIZE CLOD CRUSHER AND PRESS WHEEL ROLLER.

A great improvement has been introduced into this Implement by substituting a **solid Wrought Iron Frame with Steerage Wheel and Guide Rod,** for the ordinary Wood Frame and Shafts, whereby a saving of at least one-third in horse-power is effected, and the man is enabled to drive three horses abreast and steer the Implement to the greatest nicety without the assistance of a boy. Another great recommendation is, that each horse does his own share of the work; and the undue strain upon the shaft-horse, so much to be deprecated, is avoided. This Implement has met with great favor by all practical men who have used it, and the Judges at the late great trials of the Royal Agricultural Society's Meeting, at Leicester, placed it only second to the Beverley Implement by awarding it £9 out of £20 allotted to the Class, while the general public, B. & P. believe, have endorsed this Implement as superior for all purposes of tillage to the old Clod Crusher.

PRICES:—

Diameter.	Length.	£ s. d.	Length.	£ s. d.
24in.....	6½ feet	15 10 0	7 feet	16 10 0
26in.....	,, ...	16 10 0	,, ...	18 0 0
30in.....	,, ...	20 10 0	,, ...	22 0 0
36in.....	,, ...	25 0 0	,, ...	27 0 0

If fitted with Patent Scrapers, which also form a perfect break when necessary, £3 extra.

If fitted with Seat for Driver, £2 extra.

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CAMBRIDGE'S
IMPROVED PATENT NOTCHED ROLLERS.

This Roller consists of a "Notched or Serrated" Wheel being placed between each "Plain" Wheel. The Notched Wheels are larger in diameter than the Plain Wheels; but the hole through which the spindle passes being also larger in the Notched Wheel than in the Plain, all the Wheels are level at the bottom, and press equally on the ground. By this simple arrangement, as the Roller revolves, the part of the Notched Wheels which touches the ground gradually rises about two inches above the Plain ones, thus forcing off all clods.

ft.	in.	15-inch Diam. £ s. d.	20-inch Diam. £ s. d.	22-inch Diam. £ s. d.	24-inch Diam. £ s. d.	26-inch Diam. £ s. d.	30-inch Diam. £ s. d.
5	0	8 10 0	10 0 0	10 10 0	11 0 0	11 10 0	13 10 0
5	6	9 0 0	10 10 0	11 0 0	11 15 0	12 5 0	15 0 0
6	0	9 10 0	11 0 0	11 10 0	12 10 0	13 0 0	16 10 0
6	6	10 0 0	11 10 0	12 0 0	13 5 0	13 15 0	18 10 0
7	0	10 10 0	12 0 0	12 10 0	14 0 0	14 10 0	20 10 0
8	0	11 10 0	13 10 0	14 0 0	15 10 0	16 10 0	23 10 0

Double Shafts, 30/ extra. Seat for Driver 15/ extra.

CROSSKILL'S
IMPROVED CLOD CRUSHER.

This new Self-cleansing Clod Crusher with Patented Improvements, is entirely free from the loose lateral motion of the discs, so objectionable in the ordinary Self-cleaning Rollers, and its superior efficiency and improved action have been fully shown wherever it has been used or brought into competition.

PRICES:—

	30-in. Diameter. £ s. d.	24-in. Diameter. £ s. d.
6ft. 6in. wide	21 0 0	18 0 0
6ft. wide	19 10 0	16 10 0
5ft. 6in. wide	18 0 0	15 0 0
5ft. wide	16 10 0	14 0 0

Travelling Wheels, £3 extra.

FOWLER'S
CLOD CRUSHER FOR STEAM CULTIVATION

With 46 Rings, complete with Frame... .. .. £85 0 0

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HOLMES'

CLOVER DRESSING MACHINE.

This Machine has a good arrangement of the dressing apparatus; it has been thoroughly tested, and is highly approved. The shelling barrel is placed under the dressing apparatus; the Machine stands much steadier, as the power is applied close to the ground, the seed passes from the shelling barrel into the elevators, and is delivered to the dressing apparatus, which, being placed above, allows all the hard hulk being delivered from the sieves into the hopper of shelling barrel, to be passed through again, so as no portion has to be lifted a second time to the feeding hopper; the seed is delivered into sacks, and is warranted not to be injured. The dressing apparatus has been made of great capacity, so that any required quantity may now be passed through without running over the sieves; a side spout is also added to convey the shivers away from the chaff. It is a most complete Machine, and is adapted for 6, 7, 8, or 9-horse engines. The Drum and Beaters are wholly of Wrought Iron.

Price, complete £58 0 0

For Clover only £55 0 0

Waterproof Cover, 30s. extra.

MUMFORD'S

CLOVER SEED SEPARATOR.

This Machine is especially adapted for separating Rib Grass (plantain), Docks, &c., from Red or White Clover Seeds—and is very useful to Seed Merchants and Growers.

It will separate the finest as well as the largest seeds, take away dirt and foreign substances, and leave the sample clean for sowing.

It will take **Rib Grass or other kinds of Seed** away from Clover, and thus enhance the **Marketable Value.**

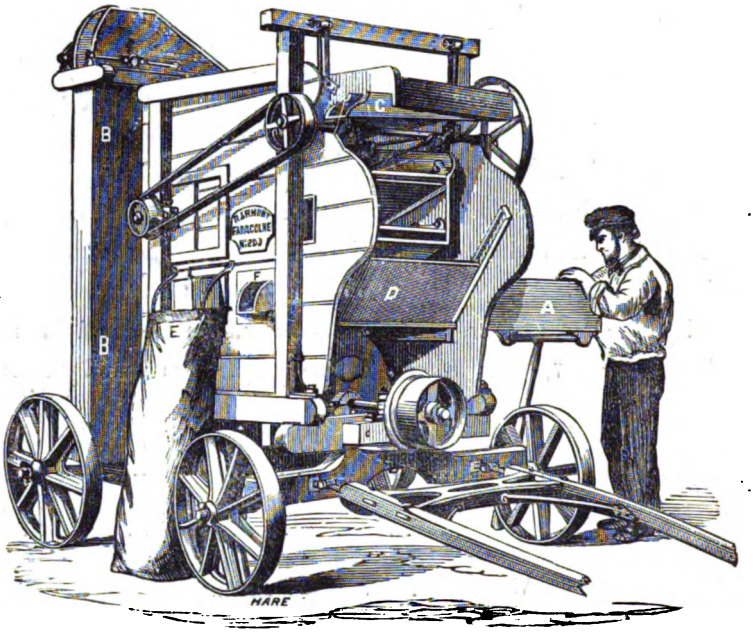
In preparing seed corn it will remove wild oats, &c., from either barley or wheat, and by using this Machine, much less seed is required. The crop does not want so much cleaning, the produce is larger and more marketable.

The Machine is adjusted by one screw, which regulates the width of shelves, and is perfectly self-acting requiring no one to work it.

Price £6 6 0

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HUNT'S
CLOVER AND TREFOIL SEED DRAWERS.



These Machines have now been before the public several years, and the increasing demand for them proves they are growing in favour. They are at work in all the principal seed districts of England, France, Holland, Hungary, and Prussia, and are giving the greatest satisfaction. They are unquestionably the simplest and most efficient before the public, and are driven at half the power required by machines of the ordinary construction.

Their principle will perhaps be better understood by reference to the above illustration, than by any description that can be given.

The Barrel is placed underneath the Machine, so that the feeder stands on the floor. The cob is placed in a trough and put into the barrel by means of a small hoe.

The Cylinder is conical, and the cob passes from the large to the small end; it is then conveyed by elevators to the top of the Machine and deposited on a sifter, which thoroughly removes all slivers, &c., before subjecting it to the blast from the fan. Owing to this the dressing can be performed much more effectually, for the heavier portions of the refuse being removed, the wind has only to act upon the chaff and dust, which, being lighter than the seed is very easily blown away, and the seed passing down a screen, is conveyed into a sack fixed on the side of the Machine. Should any hard cob come off the riddle it falls directly into the feeding hopper ready to be passed through again, an arrangement which saves a considerable amount of labour, as it entirely dispenses with the necessity of gathering the cob from the floor and lifting it again on to the feeder.

Two men are sufficient to attend to the Machine, and the use of Dressing Machines is almost entirely avoided.

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HUNT'S

CLOVER AND TREFOIL SEED DRAWERS

(CONTINUED).

These Machines will draw from three to four bushels of Clover, and from four to six of Trefoil Seed per hour, with the same Barrel, thereby saving an outlay of at least £20 for an extra Barrel, which is required in most machines, and dispensing entirely with the trouble of shifting the Barrels every time it is desired to change from drawing Clover to Trefoil, or *vice versâ*.

They are guaranteed not to injure the seed, are very compact, and mounted on four wheels for travelling.

PRICE:—

Steam Power Machine with Dressing Apparatus on Cast Iron Wheels, and fitted with either Shafts or Pole, complete...	£57 0 0
If fitted with Wood Road Wheels ... ...extra	£3 0 0
Waterproof Cover... ... ... „	£2 10 0

HUNT'S

HORSE POWER SEED DRAWERS.

FOR TWO AND FOUR HORSES.

These Machines are similar in construction to the preceding ones, with the exception of the Dressing Apparatus, and are made in two sizes, suitable for Two and Four Horse Gears. Large numbers are at work in England and on the Continent, and are giving great satisfaction.

The work performed by the Barrel is precisely the same as in the Steam Power Machine, and the separations are made by an ordinary Dressing Machine.

PRICE:—

Two Horse Power	£26 10 0
Four Horse Power	£35 0 0
Waterproof Cover, extra	£1 15 0

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CORN BINS.

Galvanized Iron Corn Bin

To hold 8 Bushels—with Hasp and Staple for padlock £1 15 0

Galvanized Iron Corn Bin

To hold 6 Bushels £1 10 0

Wrought Iron Rivetted Corn Bin

To hold 16 Bushels £3 15 0

Corn Bin

With Rain Proof Cover, Mounted on Wheels for Field Use £4 12 6

Galvanized Iron Circular Corn Bins

To hold 4 Bushels £1 5 0

To hold 6 Bushels £1 10 0

To hold 8 Bushels £1 15 0

Corn Bins

With Two Compartments—each holding 6 Bushels £3 3 0

With Three Compartments—each holding 6 Bushels £4 4 0

These Bins are all vermin proof.

CORRUGATED IRON ROOF.

Galvanized Corrugated Iron Roofs

In Two Spans—each 25 feet wide and 25 feet long, supported by Wrought Iron Principals and Purlins—resting on 9 Cast Iron Columns, 12 feet high ... £90 10 0

Single Span—15 feet wide and 25 feet long with Tie Rods... ... ... £11 10 0

Galvanized Corrugated Iron Sheets.

No 24 Wire Guage ... ... 3d. per square foot.

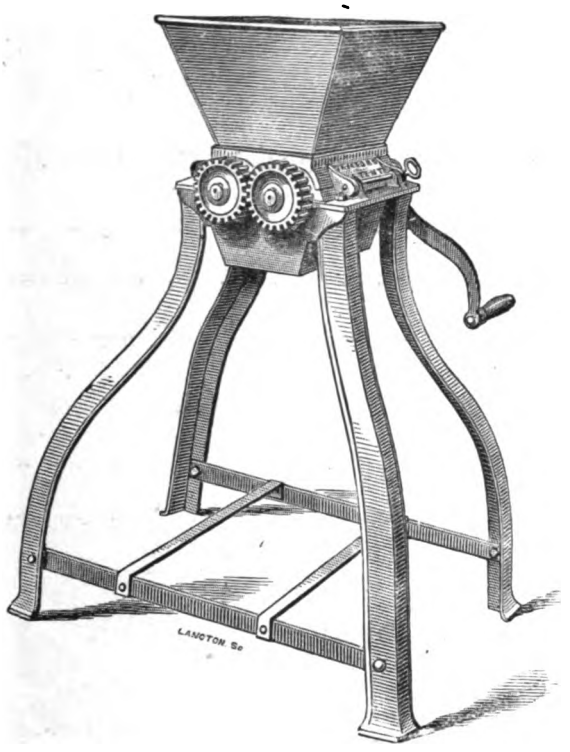
No. 22 Wire Guage... ... ... 3½d. per square foot.

No. 20 Wire Guage... ... ... 3½d. per square foot.

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BAMFORD'S

IMPROVED "ECLIPSE" CURD MILL.



In this Mill the following advantages are to be noticed:

1.—The dash is placed on a level with the grating, thus the beaters take the whole of the curd, through with them, instead of only the lips of them going through the grate. By this arrangement about double the quantity of curd is ground in the same time.

2.—The beaters are of malleable iron, and although they are made thinner to produce a finer quality of curd, they are considerably stronger than those made on the old system.

3.—Each beater is separate, therefore, in case of accident, a new one can be easily put in by simply unscrewing the nut at the end of the spindle.

4.—The whole of the Curd Mill is of metal, more durable, is not injured by scalding, and occupies less space than a wood mill.

PRICES:—

No. 1 with Galvanized Working Parts, on Iron Stand, Block Tin Hopper and Spout	£2 2 0
No. 2 similar to the above, but made with a Ladder to place across a Cheese Tub	£1 10 0
No. 3 with Galvanized Double-spiked Rollers, fitted with Double Block Tin Hopper, and mounted on a neat Framework braced together with Wrought Iron Stays. This Mill produces fine and evenly ground Curd. Price ...	£2 10 0

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CURD MILLS.

Corne's Improved Cheshire Curd Mill

On Wood Frame, with Elm Hopper £2 2 6

Improved Scotch Curd Mills.

For Cheddar System £2 5 0

Extra size for large Dairies £2 15 0

Curd Mills.

To fix on Cheese Tub £2 0 0

On Wood Stand £2 10 0

Albion Curd Mills.

No. 1 ... ... £1 17 6

No. 2 ... ... £2 2 6

No. 3 .. .. £2 12 6

Improved Curd Breaker, W.

With Stem and Head forged in one piece, and turned iron £0 10 6

Galvanized Wrought Iron Curd Mill

With Fly-wheel, to fit on any Cheese Tub or Cooler £1 17 6

Rotary Curd Knives.

With Oval tinned Blades and Improved Side Action... ... ... £3 5 0

Without Side Action £2 5 0

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DAIRY UTENSILS.

Automatic Milk Agitator to prevent Cream forming on the Milk £3 0 0

Butter Ladles, per pair £0 1 6

Butter Prints each ... ... from £0 0 6 to £0 2 6

Butter Trundles each £0 11 6

Butter Working Machine, to separate Butter Milk from Butter without hand contact (Cunningham's) £3 10 0

Butter Working Machine, No. 1, (Ahlborn's)... ... ... £5 10 0

Brushes—Set of Six for Dairy use £0 5 6

Cheese Ladder, 3ft. 6in. long £0 5 6

Cheese Numbers, per set... ... ... £0 2 0

Cheese Tubs ... 50 gallons, £2 1 8 ... 80 gallons £3 1 10 ... 120 gallons £6 0 0

Cream Bottles for transit of Cream—to hold 24 quarts—fitted with Double Covers... £1 3 0

Cream Bottles ... 20 quarts £1 0 0 .. 16 quarts £0 15 0 ... 12 quarts £0 11 0

Cream Bowl, with Lip—9-inch diameter £0 1 3

Cream Scalding Apparatus... ... ... £4 10 0

Dairy Scales, Galvanized or Tinned, to prevent rust, with Enamelled Butter Pan—China Weights—to weigh ½lbs. and 1lbs. of Butter, complete £0 17 6

Milk Cooler, Automatic, to hold 18 gallons £3 3 0

	6 quarts.	8 quarts.	10 quarts.	12 quarts.	14 quarts.
Milk Dishes, each ...	3/0 ...	4/0 ...	5/0 ...	6/0 ...	7/0

	10 quarts.	14 quarts.	16 quarts.	20 quarts.
Milk Pails—Graduated—to shew the quantity, each...	6/6 ...	7/0 ...	7/6 ...	9/6

Milk Pails, with side handles and bails, per pair £0 17 0

Milk Pails each ... ... 6 gallons 7/0 ... 8 gallons £0 8 6

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DAIRY UTENSILS

(CONTINUED).

	5 gallons.	7 gallons.	8 gallons.
Milk Pans, Strong Tin, each	4/6 ...	5/6 ...	6/6

Milk Capilliary Refrigerator on Trunnions—Size 3ft. 6in. high by 1ft. 6in. long... ... ... £11 5 0

Ditto Ditto Ditto Size 2ft. 1in. high by 1ft. 6in. long £7 5 0

Milk Sieve, Large, to suspend on Tub £0 8 6

Milk Sieve, Small, to suspend on Tub £0 6 6

Milk Skimmers ... ... from 8d. each.

Milk Strainers, 8½-inch ... ... from 2s. 6d. each.

Milk Tests (Set of Instruments in Wood Box) £0 10 0

Milk Trunks—To hold 30 gallons £2 5 0

Ditto —To hold 46 gallons £3 6 0

Ditto —Straight, with floating cover, to hold 30 gallons £1 17 6

Milk Trunk Carriage, for No. 1 Trunk £1 10 0

Refrigerator Cupboard of Wood, lined with Tin £5 10 0

Steam Metallic Cheese Vat, to hold 120 gallons £28 0 0

Ditto Ditto With Curd Agitator, to hold 100 gallons £12 10 0

Thermometers for Butter and Cheese, per set £0 5 6

Trestles (Iron) for Milk Coolers ... ... 8s. each.

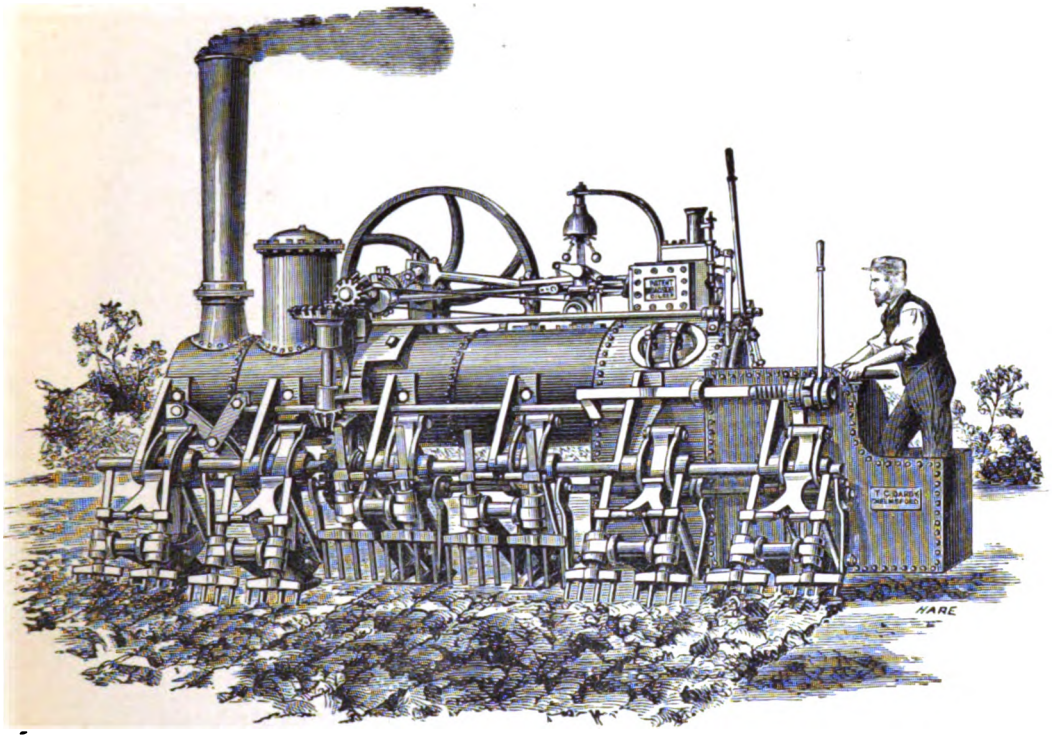
Washing Vat with Compartments for Hot and Cold Water £2 5 0

Yokes, Straps and Hooks per pair £0 12 0

Yoke and Chains £0 5 0

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DARBY'S
PATENT PEDESTRIAN BROADSIDE DIGGER.



The Six-horse Machine takes a width of sixteen feet and works at the rate of six acres in the ten hours, digging from 8 to 10 inches deep—when driven by a 6-horse Engine.

No Ropes, Riggers, Windlass, Anchors, or Porters are required.

The Engine can be used for Thrashing, Grinding, Chaff-cutting, and other Farm Work.

It is claimed that ten acres can be dug in ten hours to a depth of ten inches by the 10-horse Engine at a cost of 4s. 2½d. per acre. The following being the daily expenses :—

	s.	d.
One Man	4	6
One Boy	2	6
15 cwt. of Coal	15	0
Oil...	1	0
Water	4	0
Interest and depreciation	15	0
	£2	2 0 = 4s. 2½d. per acre.

Ten-horse Power Digger, to dig 10 Acres per day £1000

Six-horse Power Digger, to dig 6 Acres per day £800

Weight of 10-H.P. Engine Six Tons.

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J. H. KNIGHT'S

PATENT DIGGING MACHINE,

For Hop Grounds, Sugar Plantations, and other Agricultural Work.

This Machine, driven by a portable or traction engine of 6 or 8-horse power, will dig from 3 to 5 Acres per day, at a depth of 8in. to 12in.

The Machine runs on four wheels. The front wheels are for steering; the hind wheels which carry the greater part of the weight are used for propelling. On the upper part of the carriage and a little behind the line of the driving wheels, a crank shaft of three throws is fitted. This crank shaft works three vertical connecting rods, the lower ends of which are guided by radius rods or guides. Into the lower ends of these connecting rods are fitted the tines or other cutting instruments which penetrate the earth, turning it up and over. One end of the crank shaft carries a bevel wheel which gears into a pinion on the driving shaft, on the other end of this shaft is a grooved pulley driven by a **high speed cord of hemp (no steel or iron wire rope is used),** by means of which motion is communicated from the engine to the machine. A train of wheels transmit motion from the driving shaft or crank shaft to the propelling wheels. The engine may be placed in any corner of the field, pulleys attached to ordinary farm wagons being used as moveable anchors on each headland.

Mr. Knight gives the following figures as the cost of Working the Machine :—

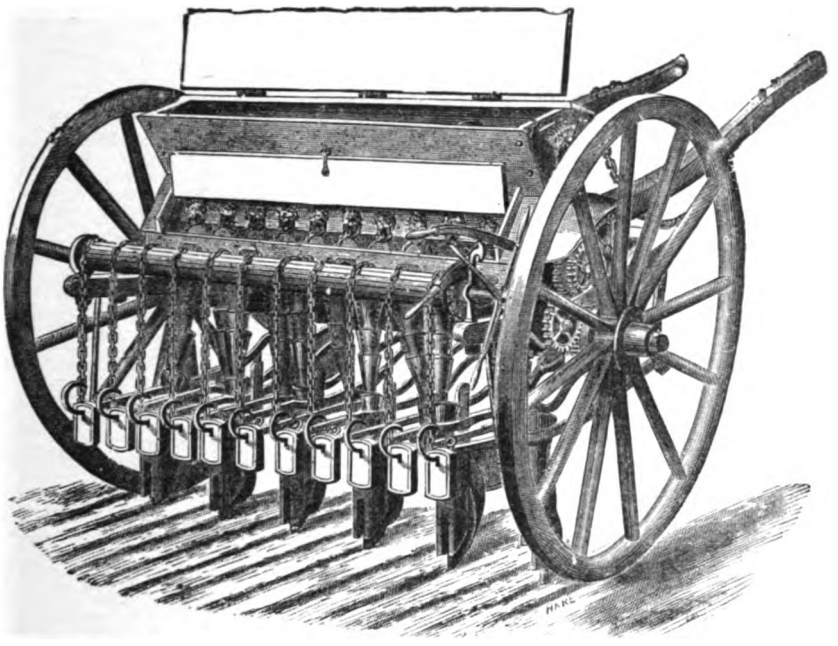
	s.	d.
Driver	5	0
Attendant	3	0
Anchor Man	2	9
Two Boys	3	0
Water and Coal Carting	5	0
Coals	10	0
Oil, Waste and Tallow	0	9
Wear and Tear of Rope (9d. per acre)	3	0
Wear and Tear and interest on Engine and Machine, say	15	0
Loss of Time by Removals	4	6
Total	£2	12 0

Four Acres Mr. Knight takes as a day's work, thus giving a total cost of 13s. per acre. Hand digging, he states, costs from 22s. to 30s. an acre, so that a large margin is left for profit.

Machine suitable for 5ft. to 6ft. planting, with Two Sets of Tines, Rope, 3 Corner Porters, 4 Working Rope Porters, 14 Post Porters, Tension Carriage, Pulleys to attach to purchaser's own wagon, pulley blocks, rope reels, anchor bars, tools, &c. £230 0 0

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PATENT CHAIN CORN DRILLS.



These Drills sow regularly up or down hill, or on sidelying ground—the pace of the horse not affecting the sowing. The quantity sown can be altered while the Drill is in motion.

PRICES OF CHAIN CORN DRILLS.

(ROWS SIX INCHES APART.)

No. of Rows.	Width, centre to centre of wheel track.	Price.	No. of Rows.	Width, centre to centre of wheel track.	Price.
		£ s. d.			£ s. d.
7	4 feet 0 inches	21 0 0	13	7 feet 0 inches	29 10 0
8	4 ,, 6 ,,	22 10 0	14	7 ,, 6 ,,	31 10 0
9	5 ,, 0 ,,	24 0 0	15	8 ,, 0 ,,	33 0 0
10	5 ,, 6 ,,	25 10 0	16	8 ,, 6 ,,	34 10 0
11	6 ,, 0 ,,	26 10 0	17	9 ,, 0 ,,	36 0 0
12	6 ,, 6 ,,	28 0 0	18	9 ,, 6 ,,	37 10 0

These Prices include Shafts, Wrough Iron Coulter Stems and Levers, Spanners, and everything suited for Drilling all descriptions of Corn and Peas; the Coulters 6 inches apart unless ordered otherwise, fitted with Patent Tips which render them more durable, and are easily replaced.

The Drills are fitted with Patent Lifting Apparatus unless otherwise ordered.

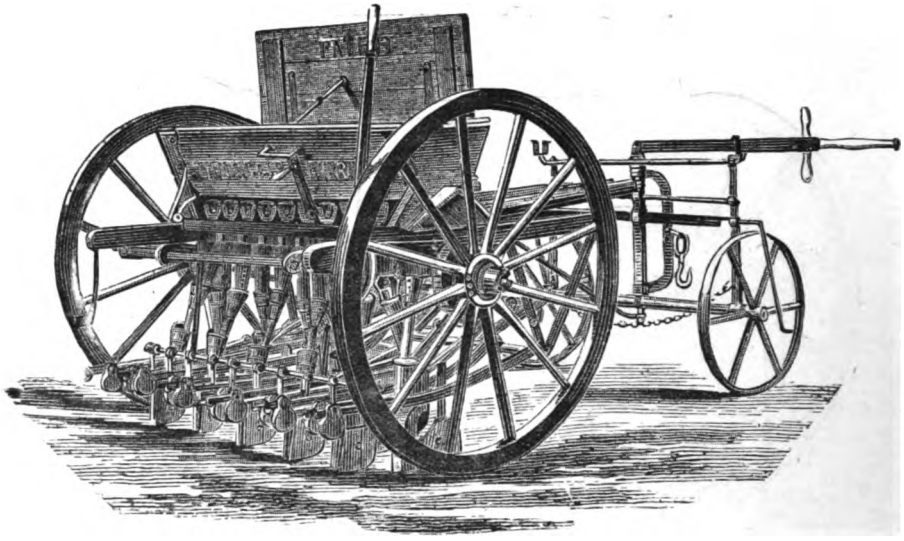
The following Extras can be supplied:—

If made wider than above stated, at per foot	£0 15 0
Fore Carriage Steerage	£4 0 0
For Drills 11 rows and above	£4 10 0
Improved Fittings for Beans and Peas, per row	£0 2 0
Box for Sowing Grass and Clover Seeds, Broadcast, per row	£0 3 6

Waterproof Covers, 15s. to 20s. each.

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PATENT "ARCHIMEDEAN" CORN DRILL.



The above engraving represents the Archimedean Corn Drill fitted complete with improved Iron Steerage, Patent Lift and Press Bar.

There is no complicated gear or rack work—the quantity sown can be regulated instantly to the greatest nicety—the seed discharge being in sight of the attendant. The levers are arranged to prevent pairing of the coulters on hilly or side lying land, and the Box is thrown out of gear and the coulters raised out of work by one movement of the handle.

PRICES:—

Complete with Shafts, 4½ feet Wheels, Wrought Iron Levers and Coulter Stalks, Patent Lift and Press Iron. Steerage extra as in Chain Drill.

CLASS A.

7	Rows at 6 inches apart	£20	0	0
8	" " "	£21	10	0
9	" " "	£23	0	0
10	" " "	£24	10	0
11	" " "	£25	10	0
12	" " "	£27	0	0
13	" " "	£28	10	0
14	" " "	£30	10	0
15	" " "	£32	0	0
16	" " "	£33	10	0

Box for Sowing Grass and Clover Seeds, Broadcast, 3s. 6d. per row.

CLASS B.

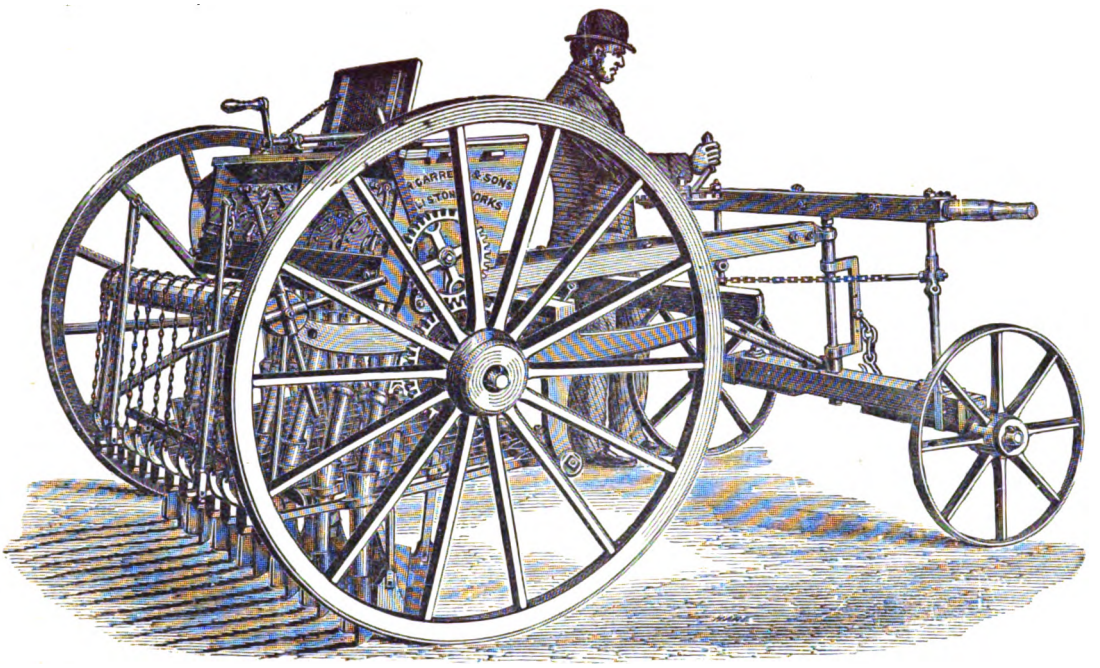
These Drills are similar to the above, but mounted on four feet wheels and fitted with Telescope Tubes and single, instead of double Lever Bar. Price £2 per Drill less than above List.

Any of the above can be fitted with Manure Box for sowing Turnips and Mangold.

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GARRETT'S
IMPROVED SUFFOLK CORN AND SEED DRILL.

ADAPTED FOR THE REQUIREMENTS OF EVERY COUNTRY.



On Wood or Iron Wheels.

This Drill is fitted with Fore Steerage which enables the man to keep the rows perfectly parallel, by making the small fore wheel run in the track of the former large one.

Number of Rows.	Spread between Wheels.	£	s.	d.	Number of Rows	Spread between Wheels.	£	s.	d.	Number of Rows.	Spread between Wheels.	£	s.	d.
8 ...	4 feet 6 inches ...	23	15	0	13 ...	7 feet 0 inches ...	31	5	0	20 ...	9 feet 6 inches ...	41	10	0
9 ...	5 ,, 0 ,, ...	24	15	0	14 ...	7 ,, 6 ,, ...	32	10	0	Fore Steerage		5	0	0
10 ...	5 ,, 6 ,, ...	26	0	0	15 ...	8 ,, 0 ,, ...	34	15	0	Ditto, with Improved Chain Gear		5	15	0
11 ...	6 ,, 0 ,, ...	27	15	0	16 ...	8 ,, 6 ,, ...	36	0	0					
12 ...	6 ,, 6 ,, ...	29	10	0	18 ...	9 ,, 0 ,, ...	38	0	0					

If made with an extra box and slip axletree to add occasionally, for one row, £4; two rows, £5; for three rows, £6, in addition to the above prices.

Extras for Suffolk Corn and Seed Drills.

If made wider than described above.....per foot	£1	0	0	Wrought-iron Stalks to Coulters... ... ...each	£0	1	3
Swing Steerage	3	0	0	If made to lighten at each end, to ensure a regular delivery on hilly land	0	12	0
An Additional Barrel for depositing turnip and mangold seed, each row	0	5	6	Press Irons for hard land	1	0	0
Wide Tins for drilling beans and peas ... each	0	2	6	Apparatus for sowing clover and rye grass at the same time with the corn ... ... per row	0	8	0
Iron instead of Wood Levers ... ...each	0	2	6	Waterproof Cover,—(N.B. All drills should be well protected from wet)	0	12	0
Tins to fit in the bottom of corn box to drill seeds in small quantities ... ... each	0	1	3				

To Drill Seed and Manure with Suffolk Corn Drill.

When it is required to drill turnips and manure with the Suffolk Corn Drill, in making, an extra box and manure levers can be arranged to affix to the frame, after removing the corn box and levers; thus making the Drill complete for the two purposes.

Price for seed and manure box, with three-jointed iron levers for Suffolk Corn Drills, up to 5 feet 6 inches wide... ... ... £16 10 0

Ditto, with five-jointed iron levers, 7 feet wide... ... ... 18 0 0

Ditto, with seven-jointed iron levers 8 feet wide 20 0 0

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GARRETT'S

GENERAL PURPOSE DRILL,

For depositing all kinds of Corn and Seeds with or without Manure,

FITTED WITH CHAMBERS' PATENT MANURE BARREL AND SCRAPERS.

This Drill is a conbination of the Suffolk Corn Drill with Chambers' Patent Manure Distributor. It is adapted to sow every kind of cereal or vegetable crop, with or without manure.

The box in which the seed is contained is separate from the manure box, so that when the Drill is required for sowing corn or seeds without manure, the manure apparatus may be removed.

PRICES:—

Number of rows.	Spread between Wheels.	£ s. d.	Number of rows.	Spread between Wheels.	£ s. d.
9	5 feet 0 inches ..	42 15 0	13	7 feet 0 inches ..	52 10 0
10	6 „ 6 „ ..	45 0 0	14	7 „ 6 „ ..	54 10 0
11	6 „ 0 „ ..	47 10 0	15	8 „ 8 „ ..	57 10 0
12	6 „ 6 „ ..	50 0 0			

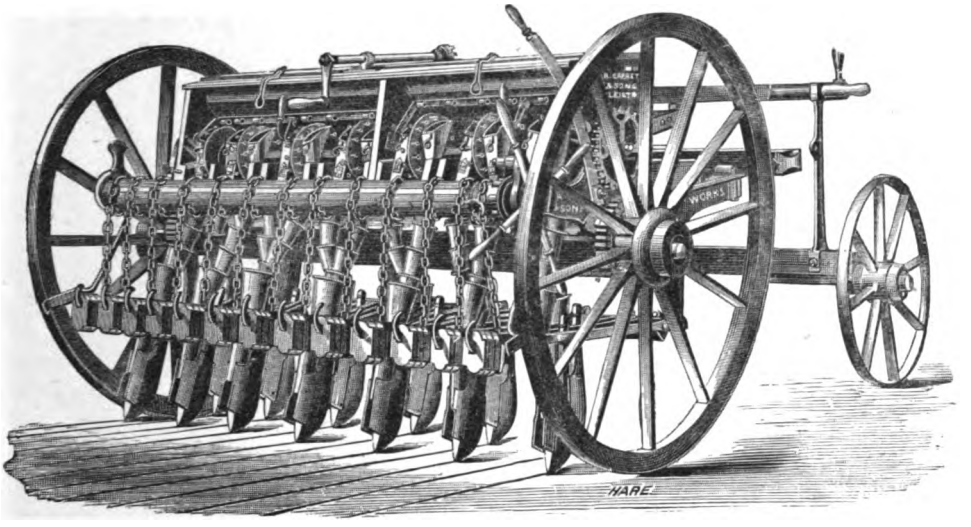
If any alteration be required in the spread of the wheels or the number of rows, it is necessary in ordering to explain it.

The following Extras in addition to those named with the Suffolk Corn Drills may be had with the General Purpose Drills.

If made wider than described above, per foot	£1 0 0
Wrought-iron Levers for double Coulters, each	£0 5 0
Ditto single ditto „	£0 2 6
Patent Jointed Iron Levers	£1 10 0
Wrought-steel Coulters for Fen Lands, each	£0 6 0
Chambers' Patent Distributing Trough for broadcast work	£1 5 0
Waterproof Cover	£0 12 0
Press Irons for hard land	£1 0 0

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GARRETT'S
IMPROVED CORN DRILL,
For Light and Small Occupations,
WITH WOOD OR IRON WHEELS.



This Drill is specially designed to secure a thoroughly substantial and durable Implement combined with extreme lightness. The seed conductors are very light and efficient—the ordinary telescopic arrangement with hanging tins and chains being dispensed with.

PRICES:—

Number of Rows.	Spread between Wheels.	£	s.	d.
6	3 feet 6 inches	18	0	0
7	4 ,, 0 ,,	19	0	0
8	4 ,, 6 ,,	20	15	0
9	5 ,, 0 ,,	22	5	0
10	5 ,, 6 ,,	23	10	0
11	6 ,, 0 ,,	24	10	0
12	6 feet 0 inches	25	10	0
13	6 ,, 0 ,,	26	5	0
14	5½ or 6 feet	27	5	0
15	6 feet	28	10	0
Fore Steerage		4	5	0
Ditto, with improved Chain Gear		4	15	0

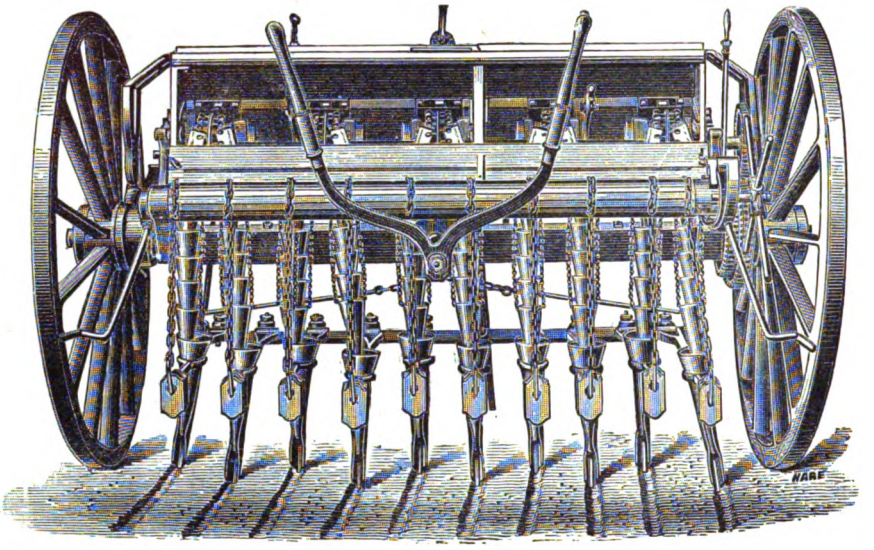
EXTRAS.

If made wider than described above ... ... per foot	£1	0	0
Swing Steerage...	£3	0	0
An additional Barrel for depositing Turnip and Mangold Seed, each rim... ...	£0	5	6
Wide Tins for Drilling Beans and Peas... ... ...each	£0	2	6
Iron instead of Wood Levers	£0	2	6
Tins to fit in the bottom of Corn Box, to drill Seeds in small quantities ...each	£0	1	3
Wrought-iron Stalks to Coulters ... ... each	£0	1	3
If made to lighten at each end, to ensure a regular delivery on hilly land... ...	£0	12	0
Press Irons for hard land...	£1	0	0
Apparatus for sowing Clover and Rye Grass at the same time with the Corn... ... ... per row	£0	8	0
Waterproof Cover.—(N.B. All Drills should be well protected from wet)... ...	£0	12	0

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GARRETT'S
SPECIAL SWING STEERAGE DRILL.

FOR LARGE OCCUPATIONS OR MIXED SOIL AND LIGHT LANDS.



The principal features in this Drill, which has been specially designed to meet the requirements of large occupiers on "The Sands," and mixed soil lands of Suffolk and Norfolk, are as follows :—

(1) **Ample Height and Breadth of Travelling Wheels,** which are identical with those of the heavy-land Suffolk Corn Drill.

(2) **The Great Capacity of the Seedbox,** a point of great importance where the fields are large.

(3) **Lightness of Framework, Levers, and all details,** and excellence of balance, in consequence of which the draught scarcely exceeds that of the "**Small Occupation Drill.**"

(4) **Ample Steerage Room and Leverage,** by means of which one Drillman can with care ensure accurate work, to be followed in due time by **Garrett's Improved Lever Horse Hoe.**

PRICES:—

Number of Rows.	Distance apart.	Spread between Wheels.	£	s.	d.	Number of Rows.	Distance apart.	Spread between Wheels.	£	s.	d.
9	6 inches	5 feet 6 inches	25	15	0	14	6 inches	8 feet 0 inches	33	10	0
10	,,	6 ,, 0 ,,	27	0	0	15	,,	8 ,, 6 ,,	35	15	0
11	,,	6 ,, 6 ,,	28	15	0	16	,,	9 ,, 0 ,,	37	0	0
12	,,	7 ,, 0 ,,	30	10	0	18	,,	9 ,, 6 ,,	39	0	0
13	,,	7 ,, 6 ,,	32	5	0	20	,,	10 ,, 0 ,,	42	10	0

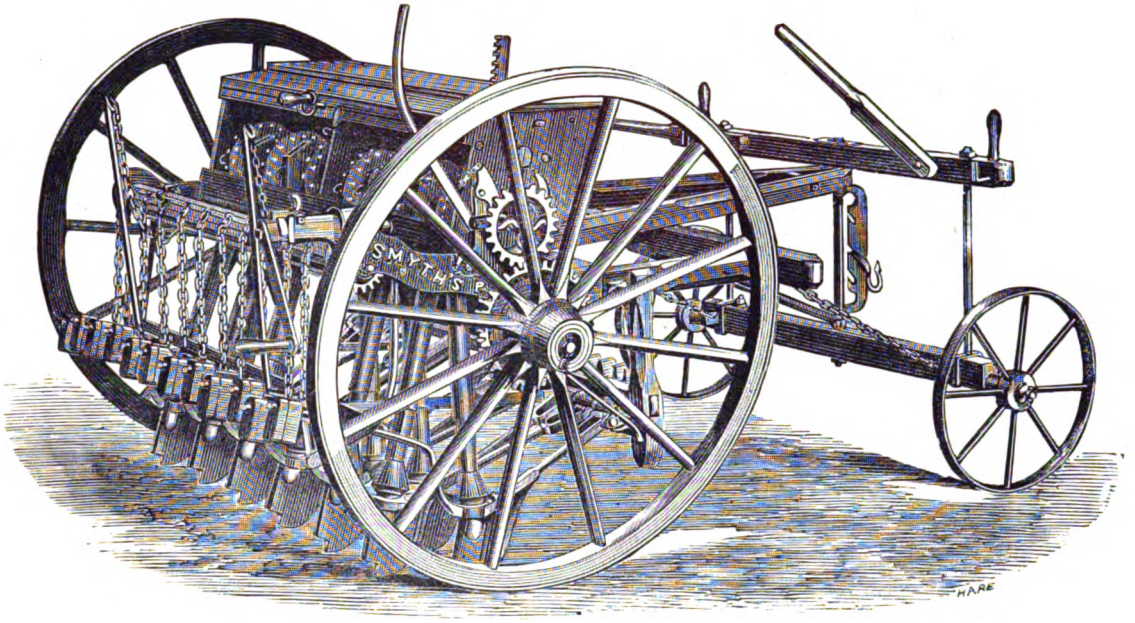
EXTRAS.

Fore-carriage Steerage	£5	0	0
An additional Barrel for depositing Turnip and Mangold Seed	each rim	£0	5	6
Wide Tins for drilling Beans and Peas	each	£0	2	6
If made to lighten at each end to ensure a regular delivery on hilly land	£0	12	0
Press Irons for hard land	£1	0	0
Waterproof Cover	£0	12	0

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JAMES SMYTH & SONS'

PATENT "ECLIPSE" CORN DRILLS.



In these Drills, the **Delivery Barrel** is so arranged, that although adapted for drilling small quantities, it will also drill large quantities, without the necessity of a very quick speed, or the use of Double Tins when drilling Peas or Beans.

The Slides for regulating the flow of grain to the Cups, rise all at once.

The Box is so formed that extra tins are never required for drilling out seeds to a small quantity.

The Levers are of Wrought Iron, well and strongly made, and so connected to the Coulters that **Wrought Iron Coulter Stalks** are never required, and extra expense is saved.

The Coulters have also an improved shape, thus, while retaining the former penetrating power, they clear themselves from rubbish much more freely, but

The Conductors are telescopic and effectually exclude all wind, wet, or dirt—and Double Tins for Peas and Beans are unnecessary.

A Reversible Seed Barrel can be supplied for drilling Turnip, Clover, and Mangold.

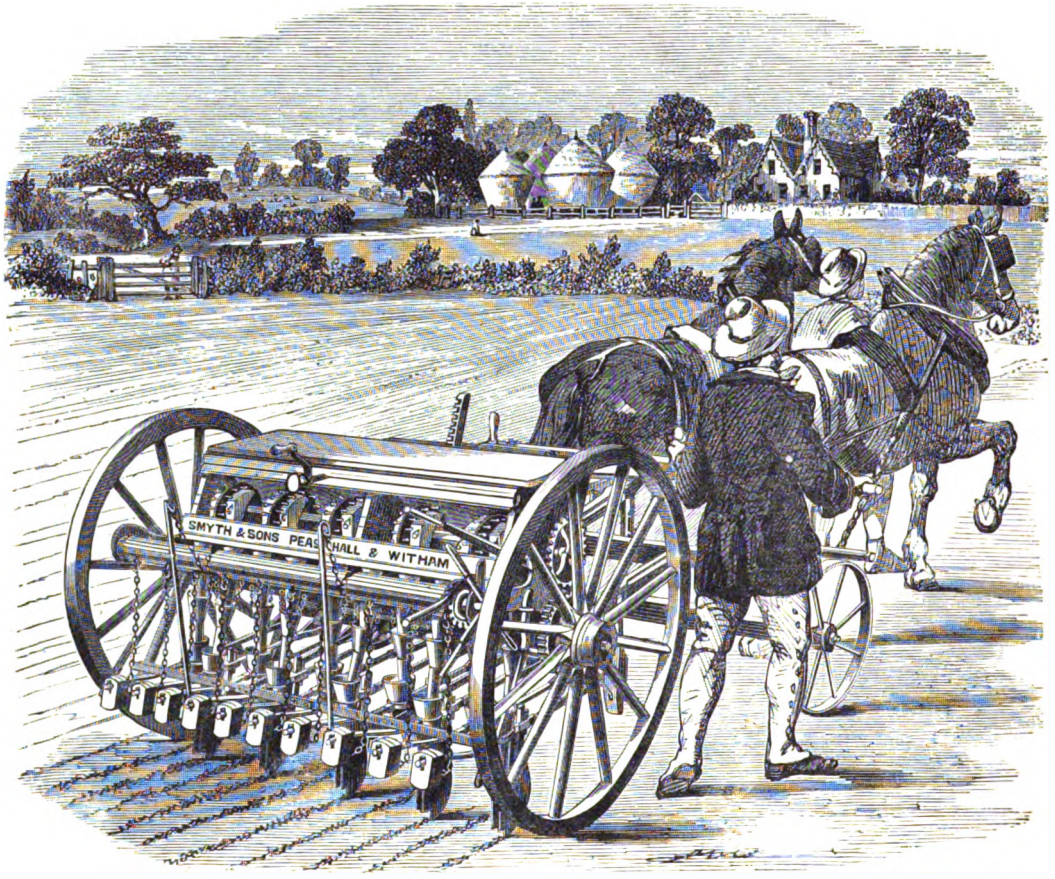
PRICES:—

No.			Prices including Press Irons. £	s.	d.	Prices exclusive of Press Irons. £	s.	d.
26.	Patent 9 Row Corn Drill,	4ft 6in. Wheel Track	25	15	0	24	15	0
27.	Ditto, 10 Row ditto	5ft. 0in. ,, ...	27	0	0	26	0	0
28.	Ditto, 11 Row ditto	5ft. 6in ,, ...	29	0	0	28	0	0
29.	Ditto, 12 Row ditto	6ft. 0in. ,, ...	30	10	0	29	10	0
30.	Ditto, 13 Row ditto	6ft. 6in. ,, ...	32	5	0	31	5	0
31.	Ditto, 14 Row ditto	7ft. 0in. ,, ...	33	10	0	32	10	0
32.	Ditto, 15 Row ditto	7ft. 6in. ,, ...	35	5	0	34	5	0
33.	Ditto, 16 Row ditto	8ft. 0in. ,, ...	36	10	0	35	10	0
34.	Ditto, 17 Row ditto	8ft. 6in. ,, ...	38	5	0	37	5	0
35.	Ditto, 18 Row ditto	9ft. 0in. ,, ...	39	10	0	38	10	0
35A.	Ditto, 20 Row ditto	10ft. 0in. ,, ...	42	10	0	41	10	0

If the width exceeds that quoted above, an extra charge of 5s. for every six inches is made.

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SMYTH & SONS'
PATENT SUFFOLK LEVER CORN DRILL
WITH WOOD LEVERS.



The above engraving represents Smyth and Sons' Suffolk Lever Corn Drill fitted with Improved Fore Carriage which is a very useful adjunct for flat lands. They are also fitted with Patent Side Cogging Apparatus and Telescopic Conductors.

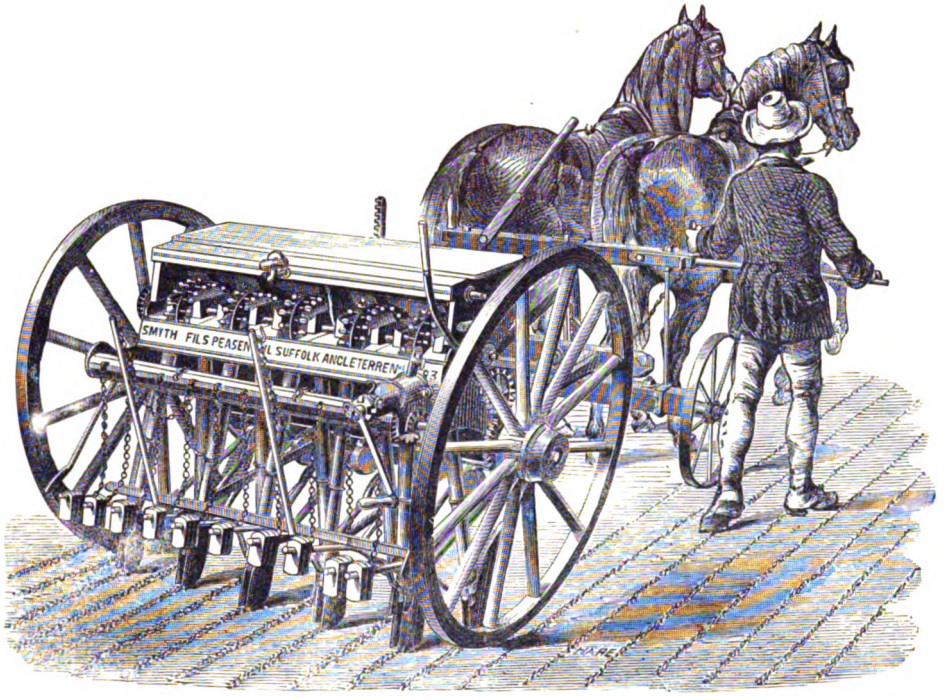
PRICES: —

No.		Prices including Press Irons	Prices exclusive of Press Irons.
1	New Drill with 9 Rows, 1 Corn Barrel	£25 5 0 ...	£24 5 0
2	Ditto with 10 Rows, ditto	26 10 0 ...	25 10 0
3	Ditto with 11 Rows, ditto	28 5 0 ...	27 5 0
4	Ditto with 12 Rows, ditto	30 0 0 ...	29 0 0
5	Ditto with 13 Rows, ditto	31 10 0 ...	30 10 0
6	Ditto with 14 Rows, ditto	32 15 0 ...	31 15 0
7	Ditto with 15 Rows, ditto	34 10 0 ...	33 10 0
7A	Ditto with 16 Rows, ditto	36 0 0 ...	35 0 0
7B	Ditto with 17 Rows, ditto	37 10 0 ...	36 10 0
7C	Ditto with 18 Rows, ditto	39 0 0 ...	38 0 0
9	Ditto with 12 Rows, and 2 to add to make 14, with ditto ...	35 0 0 ...	34 0 0
10	Ditto with 12 Rows, and 3 to add to make 15, with ditto ...	36 5 0 ...	35 5 0
11	Ditto with 13 Rows, and 1 to add to make 14, with ditto ...	35 0 0 ...	34 0 0
12	Ditto with 13 Rows, and 2 to add to make 15, with ditto ...	36 5 0 ...	35 5 0
13	Ditto with 13 Rows, and 3 to add to make 16, with ditto ...	38 0 0 ...	37 0 0
14	Ditto with 14 Rows, and 1 to add to make 15, with ditto ...	36 5 0 ...	35 5 0
15	Ditto with 14 Rows, and 2 to add to make 16, with ditto ...	38 9 0 ...	37 0 0
16	Ditto with 14 Rows, and 3 to add to make 17, with ditto ...	39 15 0 ...	38 15 0
17	Ditto with 14 Rows, and 4 to add to make 18, with ditto ...	41 0 0 ...	40 0 0
18	Ditto with 14 Rows, and 5 to add to make 19, with ditto ...	42 10 0 ...	41 10 0

10s. per foot extra for additional width of wheel track. In ordering it should be stated whether the wheels should return in their own track, or whether the Drill is required for land laid in stetches.

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JAMES SMYTH & SONS'
PATENT "NONPAREIL" CORN DRILL
(NEW PATENT OF 1878).



This Drill has Patent Hoppers which do not require to be removed when the Cup Barrel has to be taken out of the box—and the Support Bearings also drop away instantaneously.

The New Patent Cog Wheel Gear gives greater variation in quantity of seed.

The Sizes are the same as for Eclipse Drills on previous page.

The Prices are the same as for Eclipse Drills on previous page, with £1 per Drill added.

Newly Patented Cog Wheel Arrangement for hilly land is attached at an extra cost of 12s. when desired.

The following Extras are supplied with J. S. & Sons' Corn Drills when required.

Improved Fore-Carriage Steerage, complete...	£5	0	0
Ditto Hind Swing Steerage	£2	15	0
Turnip or Mangold Wurzel Seed Barrels, each wheel including spindle	£0	5	6
Double Tins for Peas and Beans ... ...each	£0	2	6
Wrought Stalks to Coulters ... ...each	£0	1	3
Extra for Wrought Coulters in lieu of Cast ... ...each	£0	3	0
Spare Cast Coulter Blades to fit Wrought Stalks... ... ...each	£0	2	0
Spare Cast Coulter Blades fitted with Wrought Iron Stalks ... ...each	£0	3	6
Spare Cast Coulters... ... ...each	£0	2	3
Left end Cogging Apparatus, for hilly land ... ...each drill	£0	12	0
Clover Seed Box for attaching to Corn Drills, for Sowing Seeds, when Drilling Barley, &c. ... ... each row	£0	8	0
Ditto, with Conducting Tins to reach down in between Levers ... ... each row	£0	9	6
Extra if fitted on frame by itself	£1	0	0
Extra for Wrought Iron Levers instead of Wood... ... ...each	£0	2	6
Spare Cog Wheels, from Nos. 12 to 36... ... ... per cog	£0	0	1
Sliding Axle and Fore Bit for Half-drills, for stetch work...	£1	10	0

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JAMES SMYTH & SONS'

PATENT LEVER CORN DRILLS,

FOR LIGHT SOILS.

These Drills are suitable for Light Soils and are not furnished with Press Irons—but are fitted with Patent Cogging Apparatus—which renders the wheels more durable, and ensures the Cog Wheels Gearing to the proper depth.

PRICES:—

No.		£	s.	d.
37	New Drill with 7 Rows and 1 Corn Barrel	19	15	0
38	New Drill with 8 Rows and 1 Corn Barrel	20	15	0
39	New Drill with 9 Rows and 1 Corn Barrel	22	5	0
40	New Drill with 10 Rows and 1 Corn Barrel	23	10	0

N.B.—The above prices are calculated at 6 inches from Row to Row.

Wider distances are subject to an extra charge.

The following Extras may be had with the above Drills.

Improved Fore-Carriage Steerage (not exceeding 5ft. in width)...	£4	5	0
Hind Swing Steerage	£2	10	0
Wrought Iron Stalks to Coulters, extra each	£0	1	3
Wrought Iron Levers instead of Wood...	£0	2	6
Double Cup Arrangement, for drilling seeds with the Corn Barrel, each Drill	£0	10	0
Separate Seed Barrels, per wheel, including spindle	£0	5	0

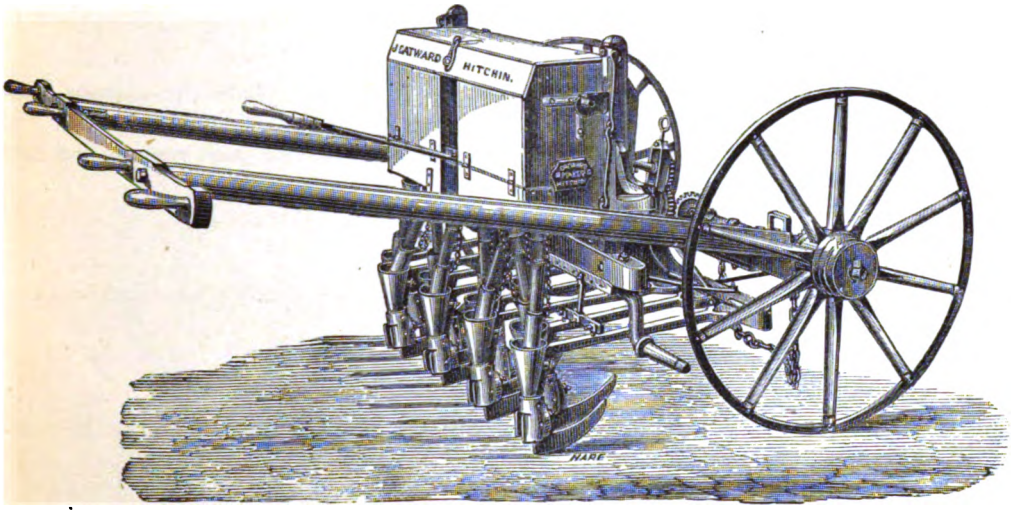
For Land laid in **Stetches or Lands** where it is required to drill a whole stetch at once, Drills similar to those described on pages 88 are to be preferred.

For Flat Work, Drills similar to those on page 87 are more advantageous.

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GATWARD'S

GENERAL PURPOSE STEERAGE CORN AND SEED DRILLS.



PRICES:—

6-Coulter Steerage Corn Drill	£16 16 0
Seed Box extra	£ 1 10 0
6-Coulter Steerage Corn Drill, with Iron Lever Bed	£17 10 0
Seed Box extra	£ 1 10 0
8-Coulter Steerage Corn Drill	£17 17 0
Seed Box extra	£ 1 15 0
8-Coulter Steerage Corn Drill, with Iron Lever Bed	£18 10 0
Seed Box extra	£ 1 15 0

These Drills are adapted for all kinds of Grain and Seeds, and for all descriptions of Land; but more particularly for hilly districts. The Corn Hopper is self-acting, and delivers the Seed as regularly up and down hill as on the flat.

The Drills are exceedingly easy to manage, and the Steerage very complete.

The Coulters can be set to Drill at various distances.

From Eight to Ten Acres per day may be drilled with a pair of horses, man, and boy.

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BIRD'S

CORN DRILLS FOR HAND POWER.

These Drills are suitable for Drilling Corn, Mangold, Turnips, Beans, Peas, Onions, Parsnips, Carrots, or any other description of Seed. They are made similar in most respects to the Suffolk Lever Drills, and work with seed cups and hoppers.

The wheels can be shifted to suit the width of Drill, and the box regulated backwards or forwards for up or down hill work.

The Coulters are so constructed that the distance between the Rows can be varied at pleasure.

These Drills are supplied with four different size cups, and four speed tooth wheels to regulate the quantity of seed to be sown, and are worked easily by a man and lad, or a pony or donkey could be attached to either of the two largest sizes.

For Market Gardeners, Small Occupiers, or Colonists, they will be found most useful Drills, and do their work in a superior manner.

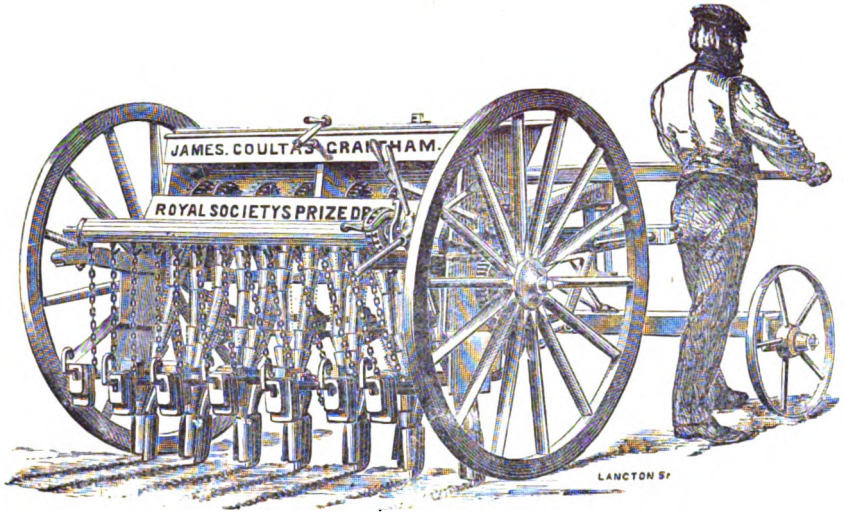
PRICES:—

8 Row Drill—54 inches wide	£12 10 0
6 Row Drill—42 inches wide	£ 8 10 0
4 Row Drill—30 inches wide	£ 6 10 0
2 Row Drill—18 inches wide	£ 5 0 0

If fitted with Rakes 2s. 6d. per Rake extra.

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COULTAS'
PATENT CORN, TURNIP, MANGOLD, AND ARTIFICIAL MANURE DRILL.



The above Engraving represents a new class of Drill. The general design of the Royal First, Prize Patent **General Purpose Drill** is entirely retained. The great distinction consisting of only one box instead of two, bringing the Seed and Manure apparatus more within reach for filling. The Seed Box, which is a most essential part of a Drill, still remains the **original size.**

The Manure apparatus consists of those well-known Chambers' Patent Barrels and Springs, the best principle for depositing Manures regularly in small or large quantities.

A necessary consequence of its lightness, simplicity, and perfection of principle is, that a really first-class Corn, Turnip, Mangold, and Artificial Manure Drill can now be constructed at a cheaper rate than has before been possible, so that whilst its important improvements distinguish it as the most efficient in the trade, its price puts it within the reach of every Farmer.

PRICES:—

No. of Rows.	Spread between wheels.	£	s.	d.
6	4ft. 0in.	26	10	0
8	5ft. 0in.	33	10	0
9	5ft. 6in.	38	0	0
10	6ft. 0in.	42	5	0
10	6ft. 6in.	43	0	0
12	6ft. 6in.	44	10	0
13	7ft. 0in.	47	10	0
14	7ft. 6in.	50	10	0
15	8ft. 0in.	53	5	0

Extras as for Drill on next Page.

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COULTAS'

PATENT CORN AND SEED DRILLS.



Awarded the First Prize of £15 at the Royal Agricultural Society of England's Field Trials, Bedford, 1874.

Are suitable for all descriptions of Corn and Seed, upon any soil, and will deposit any quantity at any given distance or depth, with the utmost uniform and regular distribution of Seed down each Row. The Seed Box is so partitioned up that it requires very little Seed to start, and prevents the same from flowing to one end of the box on sideland ground. At Plymouth, 1865, James Coultas was awarded the only Prize for his Improved Fore-Carriage Steerage, which is applicable to Drills and Horse Hoes of every description, and greatly recommended where the use of the Horse Hoe is intended afterwards. They are fitted with Double Equalising Lever Bars, which greatly decrease the draught, and arrange the Coulters so as to admit large clods to pass without confusing the tins, by which means greater accuracy in sowing may be ensured. In July 1874, a valuable improvement was effected by the substitution of a flat and spiral Spring Press Bar, for the heavy accumulation of dead weights on the Beams, giving a much better and more uniform pressure upon the Coulters, and considerably reducing the entire weight, and consequent draught of the machine.

PRICES:—

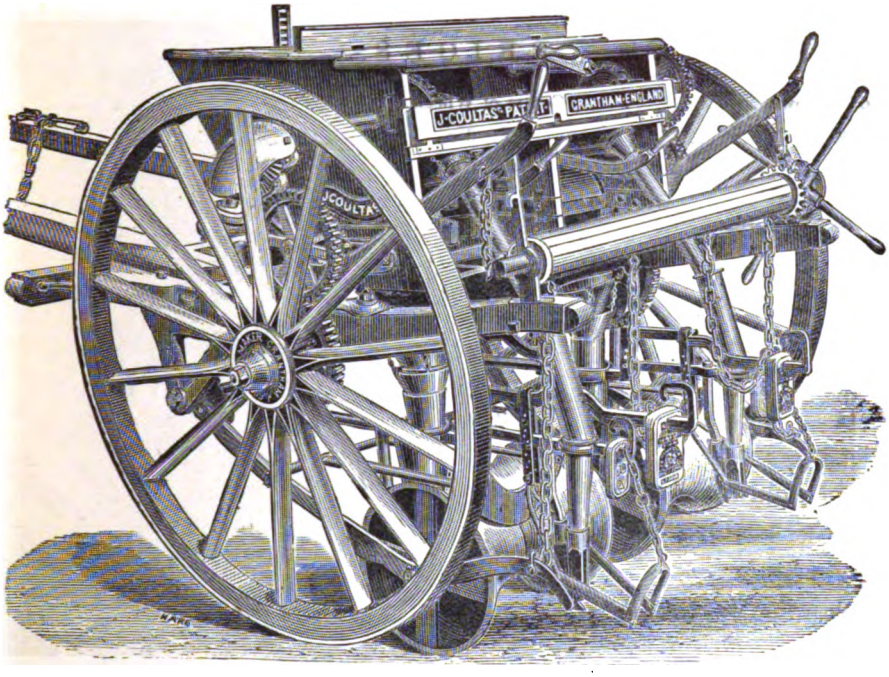
No. of Rows.		Spread between wheels.	£	s.	d.	No. of Rows.		Spread between wheels.	£	s.	d.
6	with 1 Corn Barrel	3 feet 6 inches ...	19	15	0	12	with 1 Corn Barrel	6 feet 6 inches ...	29	10	0
7	,,	4 ,, 0 ,, ...	21	10	0	13	,,	7 ,, 0 ,, ...	30	15	0
8	,,	4 ,, 6 ,, ...	23	10	0	14	,,	7 ,, 6 ,, ...	33	5	0
9	,,	5 ,, 0 ,, ...	24	15	0	15	,,	8 ,, 0 ,, ...	34	10	0
10	,,	5 ,, 6 ,, ...	25	10	0	16	,,	8 ,, 6 ,, ...	35	5	0
11	,,	6 ,, 0 ,, ...	28	0	0						

EXTRAS.

For an Improved Patent Fore-Carriage, for broad work	£5	0	0
If fitted with an additional Barrel for depositing Turnip Seed	£1	15	0
For rack and pinion to move the pigeon-hole slide as the drill travels	£1	10	0
If the drill is made to extend over more ground than is mentioned, for every additional six inches	£0	15	0
For every additional row than mentioned above	£1	0	0
Press...	£1	10	0
Patent flat and spiral spring bar	£2	10	0
Bean tins—each	£0	3	0
Left-hand Cogging Apparatus	£0	15	0
Wrought-iron Coulters — each	£0	3	0

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COULTAS'
RIDGE DRILL WITH MANURE.



Awarded the First Prize of £10 at the Royal Agricultural Society of England's Field Trials, Bedford, 1874.

The above representation shows a two-row Ridge Drill for Turnips, Mangolds, and Artificial Manures. The apparatus for Manure is the same as shown at Bedford Great Field Trials, when it appeared to be the most efficient means of depositing Artificial Manures in small and regular quantities without mixing with ashes.

The Manure is deposited separate from the Seed before the Concave Roller, which follows and presses the land into an uniform ridge, the Seed is deposited at any depth, the coverer behind follows the same and completes the operation.

PRICES:—

2 Row Turnip, Mangold, and Artificial Manure Ridge Drill	£20 0 0
1 Row Turnip, Mangold, and Manure Ridge Drill	£ 9 0 0

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WALKER'S DRILLS

Are constructed with Water Tight Seed Boxes—Telescopic Seed Conductors—and, Cogging Gear.

PRICES:—

No. of Rows.	Centre of Wheels.	£	s.	d.
6	3ft. 6in.	19	15	0
7	4ft. 0in.	21	10	0
8	4ft. 6in.	23	0	0
9	5ft. 0in.	24	5	0
10	5ft. 6in.	25	10	0
11	6ft. 0in.	26	15	0
12	6ft. 6in.	28	10	0
13	7ft. 0in.	30	5	0
14	7ft. 6in.	31	15	0
15	8ft. 0in.	33	5	0

Extra for Fore Steerage	£4	15	0
If made for and with reversible Corn Barrel, each Drill	£0	13	0
Reversible Barrel for Turnips, Mangold, &c., each Cup Wheel, including Spindle	£0	6	0
Single Seed Barrel for Turnips, Mangold, &c., each Cup Wheel, including Spindle	£0	5	0
Set of Press Irons	£1	5	0
Setting Board up to 12 rows	£0	10	0
Above 12 rows, each row extra	£0	1	0
If made wider than widths above quoted, for every additional six inches	£0	10	0

SMALL OCCUPATION AND LIGHT LAND CORN DRILLS.

These Drills possess all the improvements and advantages of the large Drills, and are similar in every respect, but lighter.

PRICES:—

No. of Rows.	Centre of Wheels.	£	s.	d.
6	3ft. 6in.	18	10	0
7	4ft. 0in.	19	15	0
8	4ft. 6in.	21	0	0
9	5ft. 0in.	22	5	0
10	5ft. 6in.	23	10	0

Extra for Fore Steerage	£4	10	0
If made for and with reversible Corn Barrel, each Drill	£0	13	0
Reversible Barrel for Turnips, Mangold, &c., each Cup Wheel, including Spindle	£0	6	0
Single Seed Barrel for Turnips, Mangold, &c., each Cup Wheel, including Spindle	£0	5	0
Set of Press Irons	£1	5	0
Setting Board, per row	£0	1	0
If made wider than the widths above quoted, for every additional six inches	£0	10	0

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CORBETT'S BARROW DRILL.

This is a most complete and efficient Drill, and is especially adapted for sowing broadcast Turnip, Clover, Trifolium, Rye-grass, or other small seeds, which it will distribute in a far superior manner to broadcast sowing by hand.

This Drill is fitted with improved slides, which are adjusted by means of a **rack and pinion,** so arranged that the **whole of the Slide is moved at once,** thus effecting a great saving of time in setting the holes, and at the same time **insures perfect uniformity in sowing** while they are far more durable than the separate plates hitherto used, and in case of wear can be easily substituted at a little cost. The slides on the one half of the box can be closed when required, so as to prevent loss of seed when sowing narrow fields, or in the finishing of fields, and in addition to which every alternate slide may be easily closed when used for sowing Turnips or other small seeds broadcast.

The arrangement for throwing the Drill out of Gear at the headlands is very simple, and it is provided with brackets for the reception of the box, so that in moving it from one field to another it will pass through a narrow gateway.

Four Yards Wide	£3 12 6
Five Yards Wide	£4 5 0
Four Yards **Double** Box Drill	£5 15 0
Draught Iron for Pony ... ...extra	£0 2 6

Drills of any width made to order.

CHAMBERS'

PATENT BROADCAST MANURE DISTRIBUTOR.

The Manure Box is fitted with Chambers' Patent Barrel and Scraper. It will sow from one bushel per acre upwards, and the quantity can be varied while at work and without changing the gear wheels.

PRICES:—

No. 1, without Scrapers	£16 10 0
No. 2—7½ft. wide between travelling wheels—with Screw Regulator for Box and Frame Shafts	£19 10 0

EXTRAS.

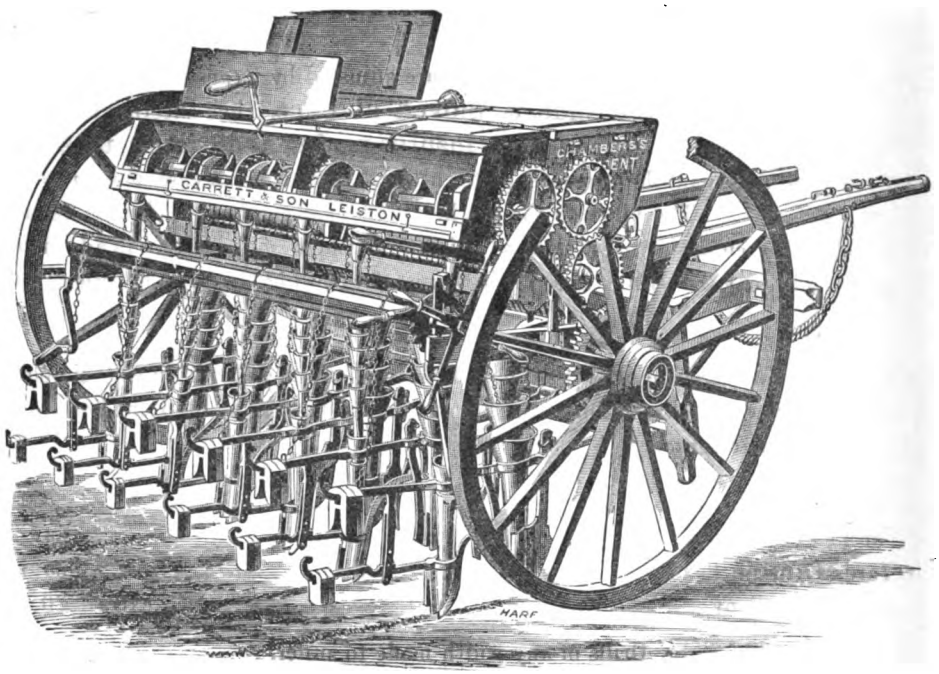
Fore Carriage Steerage	£5 0 0
For every six inches extra width	£1 0 0

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TURNIP AND MANGOLD SEED DRILL,

FITTED WITH CHAMBERS' PATENT MANURE BARREL AND SCRAPERS,

WHICH CAN ALSO BE MADE TO ACT AS A BROADCAST MANURE DISTRIBUTOR.



These Drills are made to suit all methods of cultivation for vegetable crops. They are fitted with any number of levers required, and the axletrees can be made to slip so as to alter the sizes to suit the different widths of ploughing, whether the lands be laid flat or on ridges.

The Jointed Iron Lever is a valuable addition, as both the Manure and Seed Coulters, being fixed on Levers acting independently of each other, admit of any portion of soil being placed between the manure and seed that may be desired, and the inconvenience too often arising from one or the other being buried too deep or too fleet, especially in going up or down hill, is prevented, as either coulter, being pressed into the land by different sets of weights, may be adjusted with greater precision. The quantity may be varied at pleasure from 1 to 150 bushels of any artificial or well-pulverized manures.

With the addition of another barrel, these Drills may be used for drilling peas and beans at 12 inches, or at any wider distance apart.

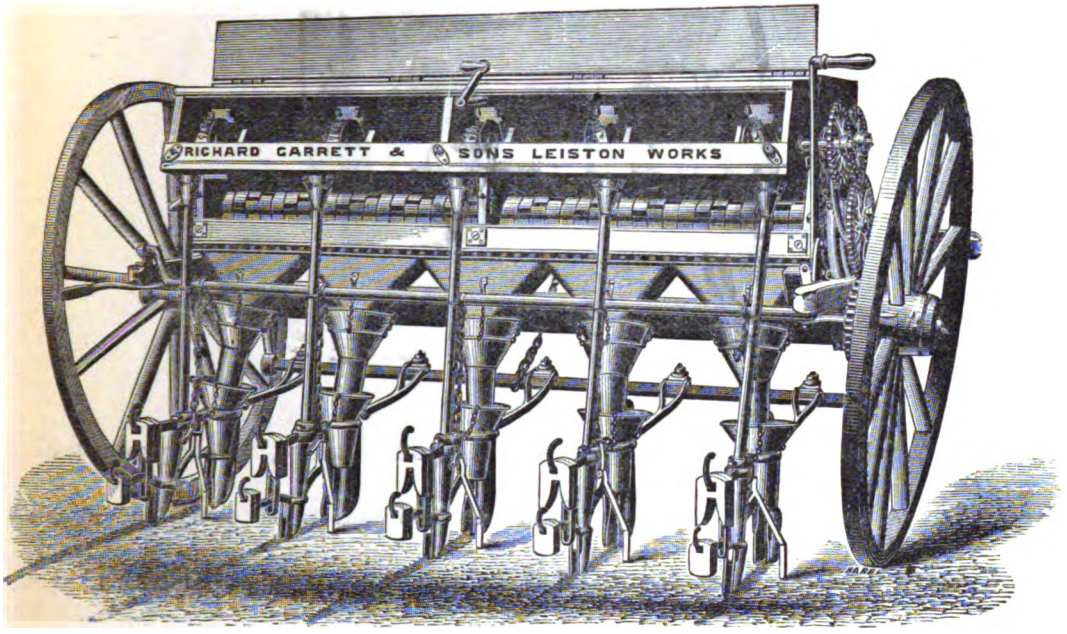
If required for drilling rough farmyard manure, a barrel with prongs, is recommended in place of Chambers' Patent Artificial Manure Barrel.

4 Row Seed and Manure Drill—4ft. wide	£29	0	0
5 Row Seed and Manure Drill—5ft. wide	£31	0	0
6 Row Seed and Manure Drill—6ft. wide	£33	0	0
7 Row Seed and Manure Drill—7ft. wide	£35	0	0

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GARRETT'S

COMBINED SEED AND MANURE DRILL.



This Implement is a combination of Chambers' Patent Broadcast Manure Distributor with a five-row drill for Turnip and Mangold Wurtzel Seeds—by means of which the crop may be drilled in rows at the same time with the chemical or artificial manure.

The Seed Box and Levers can be readily detached when the Implement is not required to work as a drill.

PRICES:—

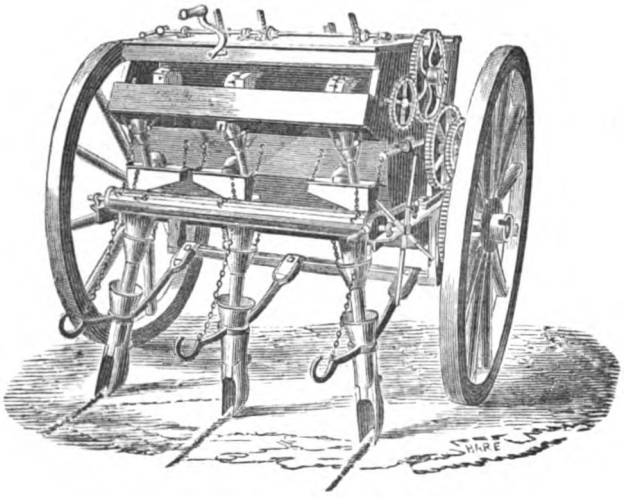
No. 2 Chambers' Patent Broadcast Manure Distributor — 7½ft. between Travelling Wheels—with Screw Regulator for Box and Frame Shafts ... £19 10 0

Seed Box and Iron Levers, with all fittings necessary for Drilling Manure and Seeds in five rows £10 0 0

Extra if Levers are jointed to deposit seed separately from the Manure... ... £ 3 0 0

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REEVE'S
DRILLS FOR LIQUID MANURE.



ROYAL AGRICULTURAL SOCIETY OF ENGLAND:—

First Prize of £8, for "Sowing Corn with Liquid Manure," at Plymouth Show, 1865.

First Prize of £7, for "The Best Liquid Manure and Seed Drill," at Plymouth Show, 1865.

First Prize of £10, for Best Liquid Manure and Seed Drill, at Bedford, 1874.

These Drills are very valuable for Growing Root and Corn Crops.

PRICE LIST A.

PRICES FOR CHANDLER'S LIQUID MANURE DRILLS.

No. 1	—A 7½ft. Drill for drilling eight rows of Liquid with Corn, or four, five, or six rows of Liquid with Turnips or Mangolds; also a complete twelve row Corn Drill without manure	£53	0	0
No. 1x	—A 7 ft. Drill, for drilling twelve rows of Liquid with Corn, or four, five, or six rows of Liquid with Turnips or Mangolds, at any distance	£53	0	0
No. 2	—A 7½ft. Drill, for drilling four, five, or six rows of Liquid with Turnips, Mangolds, &c., at any distance; also a complete twelve row Corn Drill without Liquid...	£48	10	0
No. 3	—A 7½ft. Drill, for drilling four, five, or six rows of Liquid with Turnips, Mangolds, &c., at any distance...	£34	0	0
No. 3x	—A 6½ft. Drill, for drilling ten rows of Liquid with Corn, or four or five rows of Liquid with Turnips or Mangolds at any distance; also a complete twelve row Corn Drill without Liquid	£54	0	0
No. 4	—A 6ft. Drill, for drilling six rows of Liquid with Corn, or three or four rows of Liquid with Turnips, Mangolds, &c., at any distance; also a complete ten row Corn Drill without Liquid	£46	5	0

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REEVE'S
DRILLS FOR LIQUID MANURE
(CONTINUED).

No. 4x—A 6ft. Drill for drilling eight rows of Liquid with Corn, or three or four rows of Liquid with Turnips or Mangolds at any distance ...	£40	0	0
No. 5 —A 6ft Drill for drilling three or four rows of Turnips, Mangolds, &c., with Liquid at any distance; also a complete ten row Corn Drill without Liquid	£42	0	0
No. 6 —A 6ft. Drill for drilling three or four rows of Turnips, Mangolds, &c., with Liquid at any distance	£30	0	0
No. 7 —A 5½ft. Drill for drilling six rows of Liquid with Corn, or three or four rows of Liquid with Turnips, Mangolds, &c., at any distance; also a complete eight row Corn Drill without Liquid	£40	0	0
No. 8 —A 4½ft. Drill for drilling six rows of Liquid with Corn, or two or three rows of Liquid with Turnips	£33	10	0
No. 9 —A 4½ft. Drill for drilling two or three rows of Turnips, Mangolds, &c., at any distance either on the ridge or flat; also a complete seven row Corn Drill without Liquid...	£36	15	0
No. 10—A 4½ft. Drill for drilling two or three rows of Liquid with Turnips, Mangolds, &c., at any distance, either on the ridge or flat	£26	10	0
No. 11—A 4½ft. Drill for drilling two rows of Liquid with Turnips, Mangolds, &c., either on the ridge or flat...	£25	0	0
Fore Carriage Steerage extra for 6ft. Drills and larger sizes	£ 4	10	0
Smaller sizes	£ 4	0	0
Extra for every additional row of Liquid	£ 1	10	0
For every additional row of Corn to any combined Liquid and Corn Drill ...	£ 0	15	0
Extra for every additional six inches in width	£ 0	15	0
Extra for pair of Concave Iron Rollers to shift on axle for Ridge Drill	£ 2	15	0
Extra to distribute Liquid Manure Broadcast	£ 0	10	0
Extra for 4ft. 8in. Wheels, with 3in. tires for Fen Lands...	£ 1	0	0

Extra Barrel for Mustard Seed, according to size.

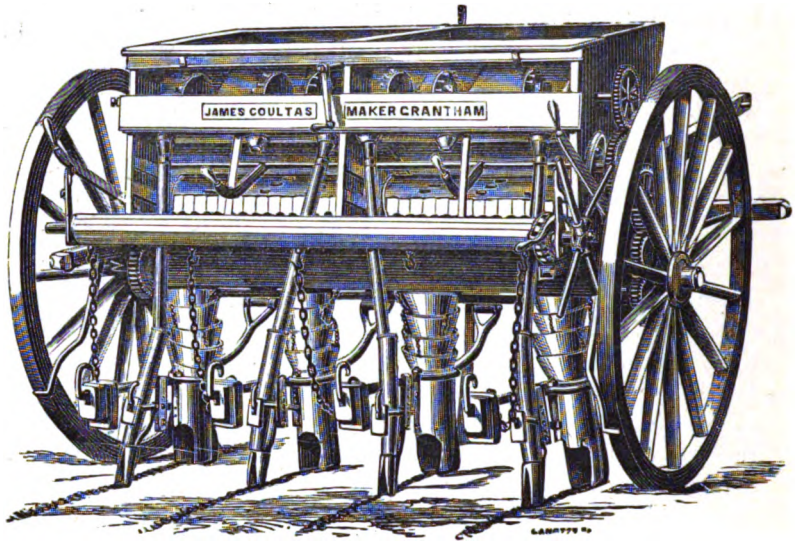
Indiarubber Tubes for conducting the Corn can be put to any Drill, at per row.

DRILLS FOR TURNIPS AND MANGOLD WURTZEL.
PRICES:—

3 Row Turnip and Mangold Drill with Manure Box, to work 3 rows on the Flat and 2 on the Ridge	£16	16	0
2 Row Turnip and Mangold Drill with Manure Box and Ridge Rollers... ...	£12	10	0
1 Row Turnip and Mangold Drill with Manure Box and Ridge Rollers... ...	£ 8	10	0
1 Row Turnip and Mangold Drill with Manure Box	£ 6	10	0
1 Row Cup Drill for Turnips, Mangold, &c.	£ 2	12	6
Extra Cup Plates, each...	£ 0	3	0
Hand Seed Drill	£ 0	10	6
Patching or Gapping Drill	£ 0	8	6

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COULTAS' ROYAL SOCIETY'S FIRST PRIZE
TURNIP, MANGOLD, & OTHER ROOT DRILLS,
WITH MANURE.



Awarded the First Prize of £10 at the Royal Agricultural Society of England's Field Trials, Bedford, 1874.

In no description of Drill have so many improvements been introduced as in the Turnip and Manure Drills. They are made with any number of Rows, for the purpose of depositing Turnips, Mangolds, &c., with Bones and Artificial Manures of every description, upon the ridge or flat. The quantity may be varied from 2 to 500 bushels per Acre. If required for drilling rough Manures in large quantities, a Barrel with prongs can be added, which is recommended in place of Chambers' Patent Artificial Manure Barrel.

The Manure and Seed are deposited through separate Beams and Coulters, which acting independently of each other, allow the Manure to be covered with soil previous to the seed being deposited, and the inconvenience too often arising from one or other being buried too deep or too shallow, especially going up or down hill, is prevented. Each Coulter is pressed by a separate set of Weights, necessarily causing the freest action.

The Manure is regulated by means of a Slide, acted upon by a Lever, which gives the Drillman ample power to raise and lower it when the Box is full of Manure, and in work.

PRICES:—

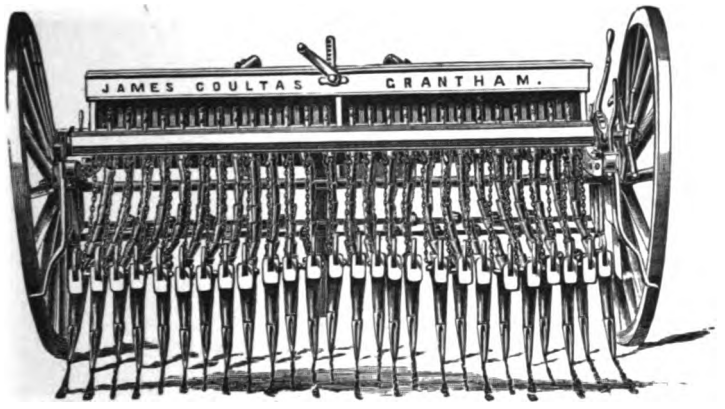
No. of Rows.	Spread between wheels,	£	s.	d.
2 and 3	4ft. 6in.	23	5	0
3 and 4	5ft. 0in.	26	0	0
3 and 4	5ft. 6in.	26	15	0
3, 4 and 5	6ft. 0in.	30	15	0
3, 4 and 5	6ft. 6in.	31	10	0
4, 5 and 6	7ft. 0in.	34	5	0

Extras as on Page 94.

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COULTAS' ROYAL SOCIETY'S

FIRST PRIZE SMALL SEED AND RYE GRASS DRILL.



Awarded First Prize of £10 at the Royal Agricultural Society of England's Field Trials at Bedford, 1874.

The above engraving represents an efficient Drill for Small Seeds and Rye Grass. It is now universally acknowledged by all practical Agriculturists, that by Drilling Clover and other Small Seeds, a much better, more regular, and certain crop is obtained. They can be drilled as near as three inches apart, and as much wider as required, by taking out some of the levers.

The Clover and Rye Grass are kept well mixed together, and by the use of an improved barrel, a constant and regular delivery of each is obtained, ensuring a more certain crop.

The quantity of Seed is regulated by Speed Wheels, as in the ordinary Drills.

They are made generally 7ft. 6in. wide, so that they can Drill about 25 acres per day.

PRICES:—

7ft. 6in. twenty-six Coulter, Small Seed Drill	£30 0 0
8ft. 0in. twenty-six Coulter, Small Seed Drill	£31 0 0
8ft. 6in. twenty-six Coulter, Small Seed Drill	£32 0 0
Extra if fitted into a ten-coulter Corn Drill	£18 10 0

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LEATHER MACHINE BANDS.

SEWN AND CEMENTED.

All Bands Sewn with Hemp unless otherwise ordered.

BEST SINGLE STRAPS.

Sewn with Hemp, Thong, or Wire.

Width.	Per foot.	Width.	Per foot.
	s. d.		s. d.
1 inch	0 4	5 inch	2 5
1¼ inch	0 5½	5½ inch	2 7
1½ inch	0 7	6 inch	2 9
1¾ inch	0 8	6½ inch	3 0
2 inch	0 9	7 inch	3 4
2¼ inch	0 10	7½ inch	3 8
2½ inch	1 0	8 inch	4 0
2¾ inch	1 2	8½ inch	4 4
3 inch	1 3½	9 inch	4 7
3¼ inch	1 5	9½ inch	4 11
3½ inch	1 6½	10 inch	5 2
3¾ inch	1 8	10½ inch	5 6
4 inch	1 10	11 inch	5 9
4¼ inch	1 11½	11½ inch	6 1
4½ inch	2 1	12 inch	6 6
4¾ inch	2 3	—	—

BEST DOUBLE STRAPS.

Sewn with Hemp, Thong, or Wire.

Width.	Per foot.	Width.	Per foot.
	s. d.		s. d.
3 inch	2 7	9 inch	8 11
3¼ inch	2 10	9½ inch	9 5
3½ inch	3 2	10 inch	10 0
3¾ inch	3 5	10½ inch	10 10
4 inch	3 7	11 inch	11 6
4¼ inch	3 10	11½ inch	12 1
4½ inch	4 1	12 inch	12 7
4¾ inch	4 3	—	—
5 inch	4 6	—	—
5½ inch	4 10	—	—
6 inch	5 4	—	—
6½ inch	6 0	—	—
7 inch	6 6	—	—
7½ inch	7 2	—	—
8 inch	7 11	—	—
8½ inch	8 5	—	—

ENDLESS LEATHER BANDS FOR PORTABLE ENGINES.

STOUT SINGLE ENDLESS.

Sewn with Hemp, Thong or Wire.

Width.	Length.								
	60ft.			65ft.			70ft.		
	£	s.	d.	£	s.	d.	£	s.	d.
4½in....	6	5	0	6	15	0	7	6	0
5 in....	7	5	0	7	17	0	8	9	0
5½in....	7	15	0	8	8	0	9	1	0
6 in....	8	5	0	8	19	0	9	12	0

STOUT DOUBLE ENDLESS.

Sewn with Hemp, Thong or Wire.

Width.	Length.								
	60ft.			65ft.			70ft.		
	£	s.	d.	£	s.	d.	£	s.	d.
4½in....	12	5	0	13	5	0	14	6	0
5 in....	13	10	0	14	12	0	15	15	0
5½in....	14	10	0	15	14	0	16	18	0
6 in....	16	0	0	17	6	0	18	13	0

LIGHT DOUBLE ENDLESS.

Sewn with Hemp or Wire.

Width.	Length.								
	60ft.			65ft.			70ft.		
	£	s.	d.	£	s.	d.	£	s.	d.
4½in....	11	0	0	11	19	0	12	17	0
5 in....	12	3	0	13	3	0	14	3	0
5½in....	13	1	0	14	3	0	15	4	0
6 in....	14	8	0	15	12	0	16	16	0

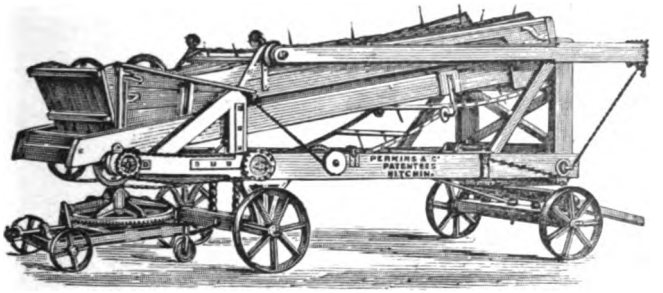
VULCANIZED INDIA RUBBER DRIVING BANDS.

	1in.	1½in.	2in.	2½in.	3in.	3½in.	4in.	5in.	6in.	7in.	8in.	9in.	10in. wide.	
	d.	d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	
2 Ply ...	5	7	0 9	0 11	1 1	1 2	1 5	1 9	2 1	...	...	...	...	per foot.
3 Ply ..	...	...	0 11	1 2	1 4	1 7	1 9	2 2	2 8	3 1	3 6	...	...	,,
4 Ply ...	...	...	1 2	1 5	1 8	1 11	2 3	2 9	3 3	3 10	4 4	...	...	,,
5 Ply ...	...	...	...	...	...	...	...	3 3	3 11	4 6	5 2	...	...	,,
6 Ply ...	—	—	—	—	—	—	—	—	—	—	—	...	...	,,

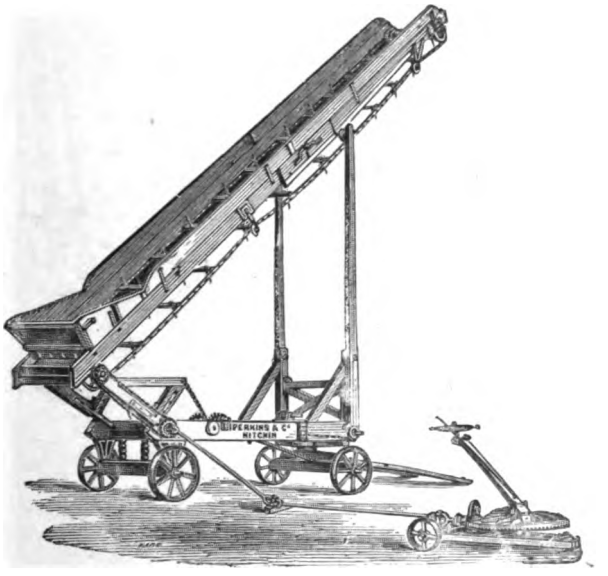
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PERKINS'

PATENT ELEVATOR AND STACKING MACHINE.



SHEWN FOLDED UP READY FOR TRAVELLING.



SHEWN IN POSITION FOR STACKING HAY OR CORN.
THE HOPPER PARTLY RAISED.

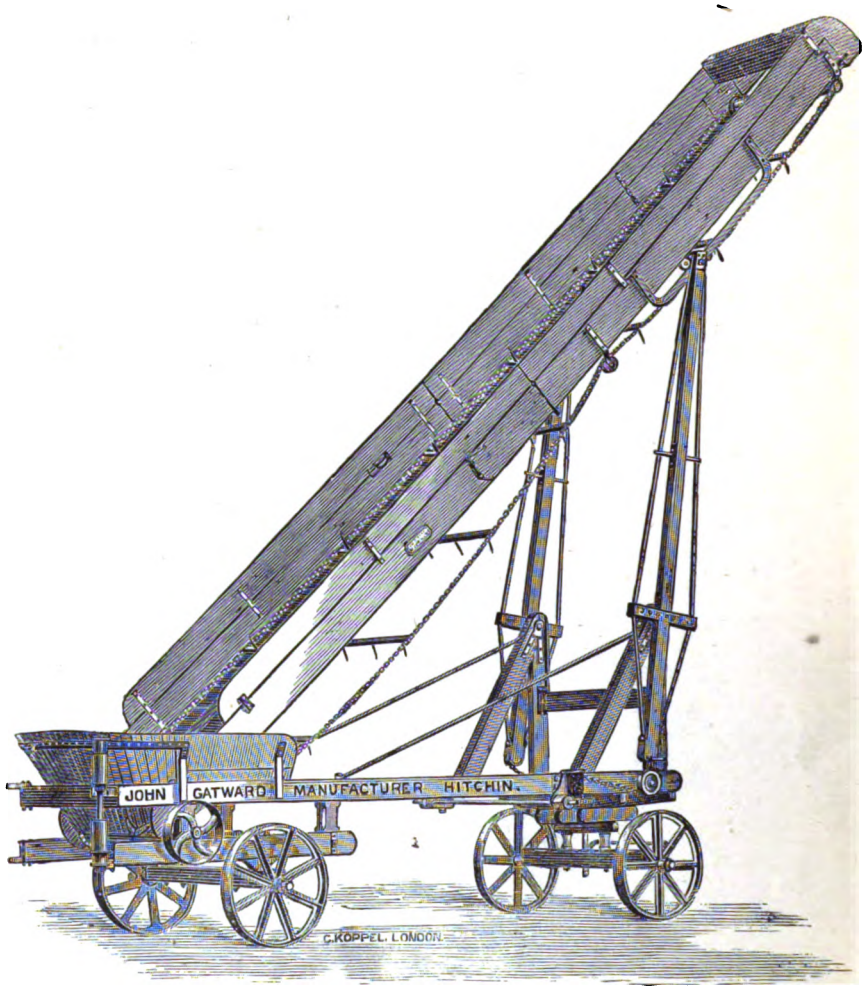
This Machine delivers to a height of 30 feet and reaches well on to the Stack.

PRICES:—

Patent Stacking Machine to deliver 30ft. high with Patent Lifting Hopper, fitted for working by horse power	£47	10	0
Extra if made to deliver 35ft. high	£ 5	0	0
Extra for Gearing to drive from Thrashing Machine...	£ 1	0	0
Extra for Angle Gearing for ditto	£ 1	0	0
Pony Gear, on Iron Frame	£ 7	0	0
One Horse Gear, on strong Wood Frame	£ 8	10	0
Ditto with second motion, on same frame	£ 9	10	0
Extra for Mounting Gear on 3 wheels for travelling...	£ 1	0	0

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GATWARD'S ELEVATOR.



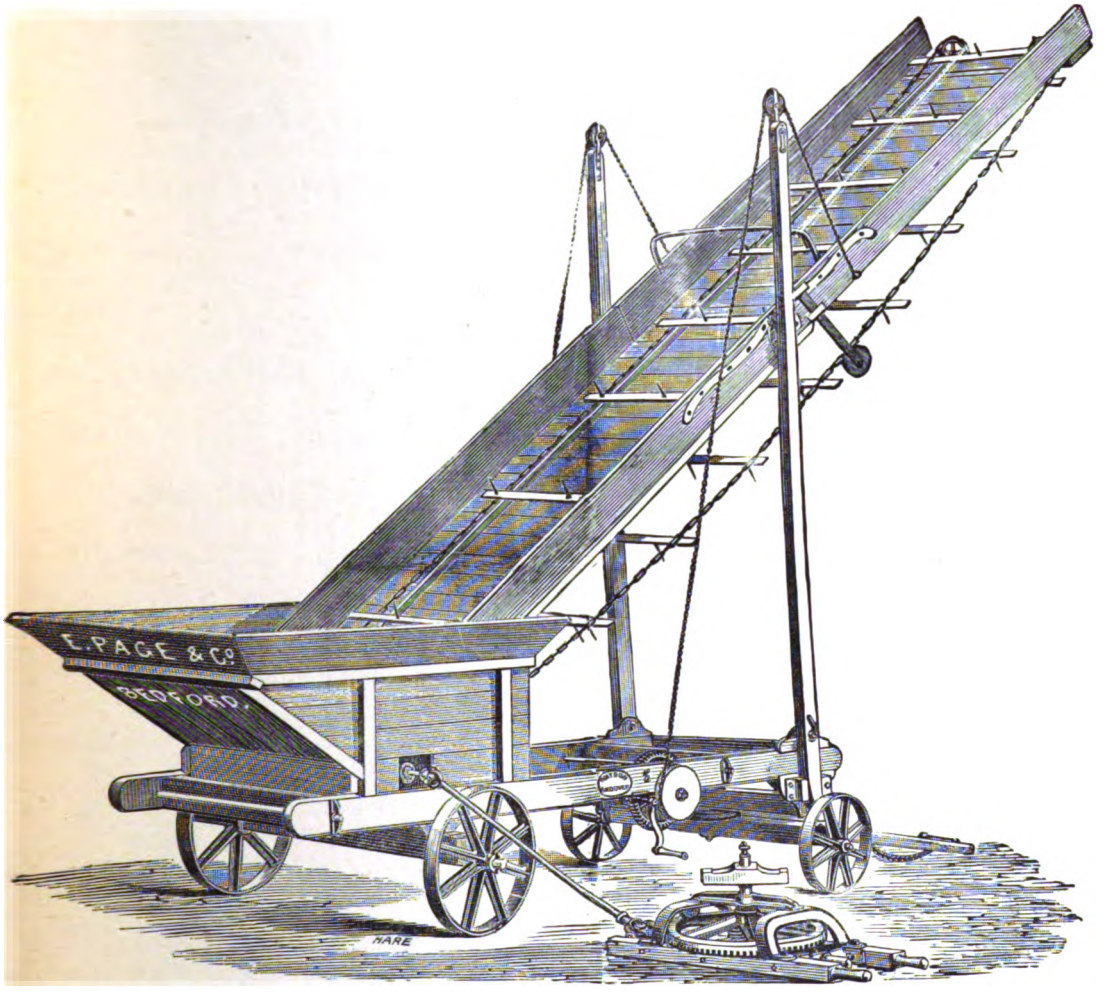
This Elevator is fitted with Chain Gearing and will deliver to a height of about 25 feet and can be made higher at proportionate prices.

PRICES:—

Price to deliver at a height of 25ft.	£43	0	0
Price to deliver at a height of 30ft.	£46	0	0
Horse Gear for working the above	£ 7	10	0
Ditto, if mounted on Wheels, extra	£ 1	1	0

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STACKING FOLDING ELEVATOR.



This Elevator is adapted for all purposes of Corn, Hay, or Straw Stacking, either by Horse Power or from the Thrashing Machine.

Price of Elevators	**£34 0 0**
Horse Gear Works to drive Elevator	**£ 8 0 0**

E. PAGE & Co., Victoria Iron Works, Bedford.

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ELEVATORS AND STACKING MACHINES.

Barford & Perkins' Patent Hay, Corn, and Straw Elevator fitted with Patent Horse-gear, works beneath the frame, will deliver 30 feet high and upwards £63 0 0

Tasker & Sons' Improved Elevator to work with a Thrashing Machine £51 0 0

Tasker & Sons' Stacking Machine £44 0 0

Humphries' Hay, Straw, and Corn Elevator to be driven at any angle by a Horse-gear or Thrashing Machine £40 0 0

Nickerson's Hay, Corn, and Straw Elevator, made on the Telescope principle, requires no fixing... ... ... £57 0 0

Cottrell's "Climax" Folding Elevator with Round Hopper £50 10 0

Ruston, Proctor, & Co's Straw Elevator—22 feet long, 4 feet 6 inches wide—to deliver at any angle £52 0 0

Wallis & Steevens' Elevator, delivers to a clear height of 26 feet £42 0 0

Canvas hood for windy weather... ... ... extra £ 1 0 0

Marshall, Son's and Co. (Limited), Elevator delivering to a height of 25 feet ... £45 0 0

Hempsted & Co. (Limited), Elevators to deliver at any angle—18 feet £38 0 0

Ditto, ,, ,, ,, —20 feet £40 0 0

Ditto, ,, ,, ,, —22 feet £42 0 0

Ditto, ,, ,, ,, —24 feet £44 0 0

Ditto, ,, ,, ,, —26 feet £46 0 0

Clayton & Shuttleworth's Stacking Elevator to deliver at any angle—25 feet ... £45 0 0

,, ,, Pony Gear for Ditto ... ... £ 7 0 0

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FAT CUTTING MACHINES

FOR THE USE OF TALLOW CHANDLERS AND MELTERS.

With this Machine one Man and Boy can cut about six cwt. of Fat into small regular pieces within an hour, in a condition most suitable for melting—saving both fuel and time.

The fat is brought forward to the knives on an endless web.

Price £13 0 0

FLOUR DRESSERS AND MILLS.

BARFORD AND PERKINS' FLOUR DRESSING MACHINE

For attachment to Corn Grinding Mill £10 0 0

LLOYDS' PATENT FLOUR MILLS

To Grind and Dress at the same time.

No. 1—Hand Flour Mill and Dressing Machine, occupying Floor Space 2′ 6″ × 1′ 4″—suitable for Emigrants ... ... £ 6 15 0

No. 2—Ditto Ditto Ditto ... ... £ 8 15 0

No. 3—To Grind and Dress at the same time by Horse or Steam Power... ... £12 0 0

No. 4—Ditto Ditto Ditto — Suitable for Institutions, Unions, &c. £16 0 0

No. 5—Ditto Ditto Ditto £20 0 0

No. 6—Ditto Ditto Ditto £25 0 0

No. 7—Ditto Ditto Ditto £30 0 0

62lbs. of Wheat will make 52lbs. of Flour, suitable for making Bread.

These (Lloyds') Mills will also Grind Barley, Indian Corn, Lentils, Rice, Rye, Pearl Barley, Groats, and Oats for Oatmeal—but the three last mentioned must be well dried.

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FOOD AND CONDIMENTS FOR CATTLE, HORSES, ETC.

BEACH'S.

Beach's Farinaceous Food for Cattle, Sheep, Pigs, &c.—a preparation of Herbs, Seeds, Roots, &c., supplied in 56lb. and 112lb. Bags... ... ...at 25/- per cwt.

Also in 4lb. and 14lb. Packets ... ... at 1/- and 3/6 each.

Beach s Condiment for Horses at same prices as above.

CLARKE'S.

Clarke's Pig Meal	per ton	£12	10	0
Clarke's Biscuits for Cattle, Sheep and Pigs	,,	£14	10	0
Clarke's Meat Biscuits for Dogs	,,	£20	0	0
Clarke's Prepared Poultry Food	,,	£20	0	0
Clarke's Granulated Meat for Pheasants, Turkeys, &c....	,,	£25	0	0

THORLEY'S.

Thorley's Food for Cattle...	,,	£34	0	0

WATERLOO.

Waterloo Feeding Oil Cakes—manufactured from Oilseeds, Corn, Locust Beans, and Spices—per ton at Hull—subject to fluctuations of market ... ... £ 8 15 0

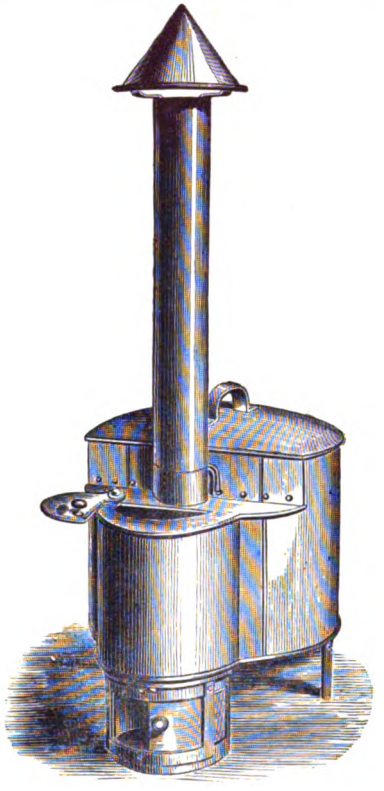
SPRATTS'.

Spratts' Patent Horse Biscuits...	per ton	£16	10	0
Spratts' Patent Biscuits for Greyhounds	,,	£15	0	0
Spratt's Patent Dog Cakes	,,	£20	0	0
Spratts' Patent Poultry Meal...	,,	£20	0	0

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BARFORD'S
PORTABLE ANNULAR BOILER

Is of novel construction—the Fire Box being surrounded with water, the fuel is used with considerable economy.



BOILER ONLY.

This Boiler is valuable to the Farmer for the purposes of Boiling Water, Steeping Linseed, Corn, &c.; and in a steamer, which fits on the top, Potatoes and other Roots may be expeditiously and cheaply cooked.

It may also be advantageously applied in wash-houses, as well as for cooking purposes; while for Pic-nic and Tea Parties, Public Fêtes, Volunteer Meetings, and Camp Purposes, it will be found to be unrivalled.

PRICES:—

	Galvanized Iron.	Copper.	Extra for Galvanized Steamers.	Contents of Steamers.
No. 1—15 Gallons	£4 0 0 ...	£5 10 0 ...	£0 17 6 ...	1 Bushel.
No. 2—25 Gallons	£5 0 0 ...	£6 15 0 ...	£0 19 0 ...	1¼ Bushel.
No. 3—35 Gallons	£5 10 0 ...	£7 15 0 ...	£1 1 0 ...	1½ Bushel.
No. 4—50 Gallons	£7 0 0 ...	£9 10 0 ...	£1 5 0 ...	2½ Bushel.
No. 3½—35 Gallons—Galvanized Iron, with large Fire Box and 3-bushel Steamer...				... £7 10 0

This size forms an admirable Portable Farmer's Steaming Apparatus.

Loose Galvanized Linseed Pans, for No.	1	2	3	3½	4
	15/6	17/-	19/-	20/-	25/-

If made of Tinned Copper, No. 1, 10/-; No. 2, 15/- extra. Travelling Wheels and Handles, 15/- to 20/- extra. Larger sizes if required. Draw-off Tap, 6/-.

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AMERICAN ELASTIC CAST STEEL FORKS.

POLISHED OVAL PRONGS. BEST ASH HANDLES.

SUPERIOR FINISH AND TEMPER.

TWO-PRONG FORKS.

	4ft.	4½ft.	5ft.	5½ft.	6ft.	6½ft.	7ft.	8ft. handle.
9-inch Prongs, per dozen...	24/-	25/-	26/-	26/-	27/-	—	—	—
10-inch Prongs, ,, ...	26/-	28/-	29/-	29/-	30/-	31/-	33/-	37/-
11-inch Prongs, ,, ...	30/-	30/-	30/-	32/-	32/-	34/-	36/-	40/-
12-inch Prongs, ,, ...	32/-	32/-	33/-	33/-	33/-	36/-	36/-	42/-
13-inch Prongs, ,, ...	—	—	35/-	35/-	36/-	38/-	40/-	44/-
14-inch Prongs, ,, ...	—	—	37/-	38/-	39/-	—	43/-	47/-
15-inch Prongs, ,, ...	—	—	—	—	43/-	—	47/-	51/-
16-inch Prongs, ,, ...	—	—	—	—	—	—	52/-	56/-

Strapped Ferrule, all sizes and lengths, 6/- per dozen extra.

STABLE FORKS.

With blunt points, four to five feet handles... ... ... 30/- per dozen.

CORN FORKS.

6 to 7 feet handles ... ... 30/- per dozen.

THREE-PRONG FORKS.

	4ft.	4½ft.	5ft.	5½ft.	6ft.	6½ft.	7ft.	8ft. handle.
10-inch Prongs, per dozen...	—	34/-	35/-	36/-	—	—	—	—
11-inch Prongs, ,, ...	—	37/-	—	39/-	40/-	—	—	—
12-inch Prongs, ,, ...	—	—	41/-	42/-	43/-	—	—	—
13-inch Prongs, ,, ...	—	—	—	—	—	—	52/-	—
14-inch Prongs, ,, ...	—	—	—	—	—	52/-	—	—
11-inch Prongs, Strapped, per dozen	—	—	45/-	46/-	—	—	—	—
12-inch Prongs, Strapped, per dozen	—	47/-	48/-	49/-	51/-	53/-	58/-	
13-inch Prongs, Strapped, per dozen	—	—	—	52/-	—	—	—	—

FOUR-PRONG FORKS.

4-Prong best Elastic Cast Steel Barley Fork, with Guard ... ... 84/- per dozen.
4-Prong Wood Barley Fork, with Guard ... ... 51/- per dozen.

AMERICAN ELASTIC CAST STEEL MANURE FORKS,

WITH SOLID STEEL SHANKS, POLISHED OVAL PRONGS, AND DOUBLE CAPPED FERRULES.

3-Prong 12-inch best Elastic Cast Steel Manure Fork,			long handle	48/- per dozen.
Ditto	Ditto	Ditto	D handle...	48/- per dozen.
Ditto	Ditto	Ditto	long handle, strapped	54/- per dozen.
4-Prong 12-inch best Elastic Cast Steel Manure Fork,			D handle...	60/- per dozen.
Ditto	Ditto	Ditto	D handle, strapped...	66/- per dozen.
Ditto	Ditto	Ditto	Crutch handle ...	60/- per dozen.
4-Prong 13-inch best Elastic Cast Steel Manure Fork,			D handle	63/- per dozen.
Ditto	Ditto	Ditto	D handle, strapped .	69/- per dozen.
Ditto	Ditto	Ditto	Crutch handle... ...	63/- per dozen.
4-Prong 12-inch best Elastic Cast Steel Manure Fork,			long handle	60/- per dozen.
Ditto	Ditto	Ditto	long handle, strapped	66/- per dozen.
5-Prong 13-inch best Elastic Cast Steel Manure Fork,			D handle...	81/- per dozen.
Ditto	Ditto	Ditto	long handle	81/- per dozen.

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GAME NETTING.

Prices per Lineal Yard, Twenty-four Inches Wide.

WIRE NETTING. GALVANIZED AFTER MADE.	Mesh.	Light No. 19.	Medium No. 18.	Strong No. 17.	Extra Strong No. 16.
	In.	s. d.	s. d.	s. d.	s. d.
For Training Plants, &c.	3	0 2	0 2¾	0 3½	0 4
For Poultry, Hares, &c.	2	0 3	0 3½	0 4¼	0 5¼
Proof against Rabbits, Hares, &c.	1⅝	0 3¼	0 4	0 4¾	0 6
Perfectly proof against the smallest Rabbits	1½	0 4	0 4¾	0 6	0 7½
For Pheasantries, &c....	1¼	0 6	0 7½	0 10	1 0
For Pheasantries (Sparrow-proof)	1	0 7½	0 9	1 0	1 4
		No. 20.	No. 19.	No. 18.	
For Aviaries, Windows Guards, &c.	¾	0 10	1 0	1 2	
Ditto Ditto	⅝	1 6	1 8	1 10	

Made and Sold in Rolls of Fifty Yards Each.

3in., 2in., 1⅝in., 1½in., in widths from one to six feet, at Prices proportioned to the above Scale. 1¼in., 1in., ¾in., and ⅝in., are not made wider than four feet.

Tying Wire, Eightpence per Pound.

SUGGESTIONS FOR USE.

Light, No. 19.—This quality is generally used for the smallest Meshes, or where the Netting is only for temporary use.

Medium, No. 18.—This strength is the best and most usual for the Meshes generally in use, from 1½ to 2 inches; for general purposes, the 1⅝in. of this quality is strongly recommended.

Strong, No. 17.—A very strong Netting, the use of which is economical on account of its great strength and durability.

Extra Strong, No. 16.—For large Meshes, and where special strength is required.

The usual height for Game-proof Netting is 24 inches; 30 inches and 36 inches are, however, often preferred.

NOTE.

Rabbit Netting.—Although 1⅝in. and 2in. Netting are sometimes used as a protection against Rabbits, it is agreed by all authorities on the subject that the 1½in. is the only really reliable Mesh against small Rabbits.

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GAS COOKING AND HEATING STOVES.

"Cheerful" Gas Stove, 30in. high, 22in. wide—Fitted with Ribbed Copper Reflectors ... £ 6 6 0

"Cheerful" Gas Stove, 32in. high, 28in. wide—Fitted with Coloured Ornamental Tiles ... £ 7 10 0

Pedestal Gas Stove with Encaustic Tiles—34in. high, 17in. square at base ... £ 6 6 0

Ornamental Gas Stove, 32in. high, 34in. wide, 28in. deep ... £ 6 15 0

Ditto Ditto Ditto Bronzed ... £ 7 5 0

Ditto 21in. high, 19in. wide, 17in. deep ... £ 2 2 0

Ditto Ditto Ditto Bronzed ... £ 2 5 9

Gas Stove, 11in. high, 9in. wide, 8in. deep ... £ 1 0 0

Gas Stove, 12in. high, 9in. wide, 8in. deep ... £ 1 10 0

SYMONS'S

HORIZONTAL TUBULAR GAS STOVES

FOR CHURCHES, CHAPELS, SCHOOLS, PUBLIC BUILDINGS, &c.

30in. long ... £1 10 0 ... 36in. long ... £1 16 0 ... 42in. long ... £ 2 2 0

JONES'S

PATENT HYGROMETIC VENTILATING GAS STOVES.

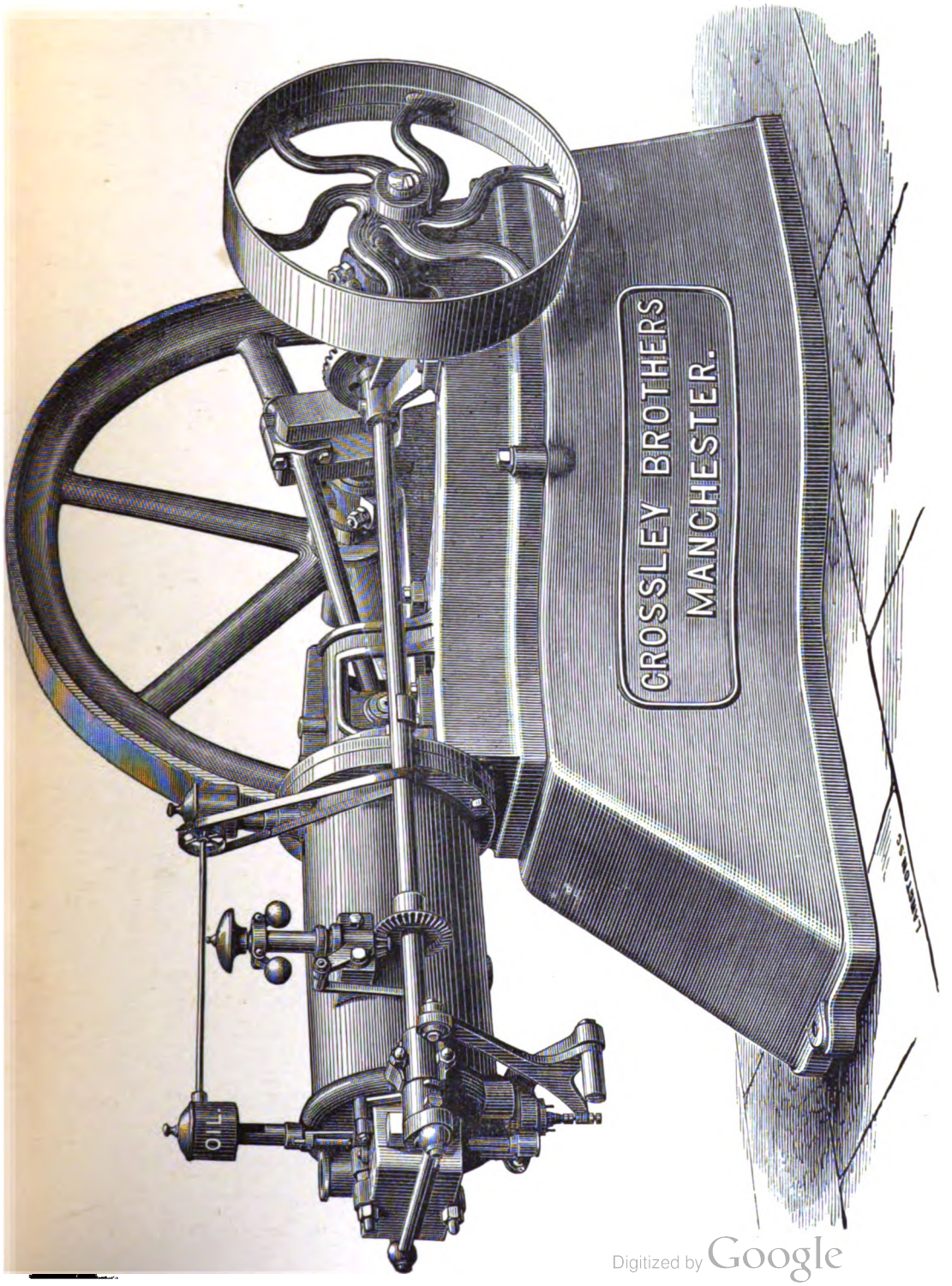
PRICES:—

	Black.	Bronzed.
Small Stove, with Plain Case—height 28in.	£0 12 6	£ 0 14 0
Small Stove, Corrugated—height 32in.	£0 18 0	£ 1 0 0
Medium Stove, Corrugated—height 38in.	£1 5 0	£ 1 7 6
Large Stove, Corrugated—height 42in.	£1 15 0	£ 1 18 0
12ft. Prepared Flexible Tube, for the above		£ 0 4 6
Cock and Nozzle for the above		£ 0 1 6

The Gem Roasting and Boiling Stove (for Gas) ... £ 0 10 6

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THE OTTO SILENT GAS ENGINES
(OTTO & CROSSLEY'S PATENT).



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THE OTTO SILENT GAS ENGINES

(OTTO & CROSSLEY'S PATENT).

Cost of Gas 1d. per hour per Indicated Horse Power calculating at 4/- per 1000 feet.

The Indicated Horse Power is calculated from the diagram in the usual way—one-horse power being taken at 33,000 foot lbs. per minute.

In these Engines a dilute mixture of gas and air is ignited at the beginning of the stroke, leaving a large space for the effective expansion of the gases. No boiler is required and there is no nuisance from smoke, coals, or ashes.

A Piston speed of 330 feet per minute is found to be the most economical.

PRICES:—

	Indicated Horse Power.		
One-Horse Power Engine	2	...	£100 0 0
Two-Horse Power Engine	3½	...	£135 0 0
Three-and-a-half-Horse Power Engine...	5	...	£170 0 0
Eight-Horse Power Engine	12½	...	£250 0 0

Water Vessels Extra.

One-Horse...	£2 10 0
Two-Horse...	£3 5 0
Three-and-a-half-Horse	£4 0 0
8-Horse Power...	£6 0 0

THOMSON, STERNE, & Co.'s

PATENT GAS ENGINES.

PRICES:—

One-and-a-half-Horse Power	£100 0 0
Quarter-Horse Power Engine with Gas-heated Boiler, complete with Gas Furnace...	£ 36 0 0
Half-Horse Power Engine	£ 45 0 0
One-Horse Power Engine	£ 56 0 0

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GLASS AND GLAZING.

For Greenhouses and Conservatories.—English Sheet Glass of 21ozs. to the square foot is generally used.

PRICES OF ENGLISH SHEET GLASS, FOR HORTICULTURAL PURPOSES.

In CRATES, Sizes various, not exceeding	15 ozs. PER FOOT.			21 ozs. PER FOOT.		
In superficial contents.	Best.	2nds.	3rds.	Best.	2nds.	3rds.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
11 feet ..	0 8½	0 6	0 4½	0 9	0 8	0 6½
13 feet ..	0 10	0 7	0 5	0 11	0 9	0 7
15 feet ..	—	—	—	1 2	0 10½	0 8

In CRATES, Sizes various, not exceeding	26 ozs. PER FOOT.			32 ozs. PER FOOT.		
In superficial contents.	Best.	2nds.	3rds.	Best.	2nds.	3rds.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
9½ feet ..	—	—	—	1 3	1 0	0 10
11 feet ..	1 1	0 10	0 8	1 6	1 2	0 11
13 feet ..	1 2	0 11	0 8½	1 10	1 4	1 1

In SQUARES, Cut to order.	15 ozs. PER FOOT.			21 ozs. PER FOOT.		
Under 9 by 7	0 5	0 3½	0 2⅝	0 6	0 5	0 3½
Under 12 by 9 and Quarries	0 6	0 4½	0 3½	0 7	0 6	0 4½
Under 14 by 10	0 7	0 5½	0 4½	0 8	0 7	0 6
Not above 1½ft	0 8	0 6	0 4½	0 9	0 8	0 6½
,, 2 ft.	0 9	0 6½	0 4⅝	0 10	0 9	0 7
,, 3 ft.	0 9½	0 7	0 5	0 10½	0 9½	0 7½
,, 4 ft.	0 10½	0 7½	0 5½	1 0	0 10	0 8
,, 6 ft.	0 11	0 8	0 6	1 0	0 10½	0 8½
,, 8 ft.	1 0	0 9	0 6½	1 1	0 11	0 9
,, 11 ft.	1 2	0 10	0 7	1 3	1 0	0 9½

In SQUARES, Cut to order.	26 ozs. PER FOOT.			32 ozs. PER FOOT.		
Under 9 by 7	0 8	0 7	0 5	0 11	0 9	0 7
Under 12 by 9 and Quarries	0 9	0 8	0 5½	1 0	0 10	0 8
Under 14 by 10	0 10	0 9	0 6½	1 1	0 11	0 9
Not above 1½ft	0 11½	0 10	0 8	1 3	1 0	0 10
,, 2 ft.	1 1	0 10½	0 8¼	1 4	1 2	0 10½
,, 3 ft.	1 1	0 11	0 9	1 6	1 3	0 11
,, 4 ft.	1 2	0 11½	0 9½	1 7	1 4	1 0
,, 6 ft.	1 3	1 0	0 10	1 8	1 5	1 1
,, 8 ft.	1 4	1 1	0 11	1 10	1 7	1 2
,, 11 ft.	1 5	1 2	1 0	2 0	1 9	1 3

GLASS TILES.

For intermixing with Pantiles in Roofs of Warehouses, Lofts, Barns, &c., avoiding both the expense of Skylights, and annoyance from dripping, forming, as they do, a part of the roof. Of the usual form and size, about 14 by 10in.

PLAIN ROLLED PLATE.	⅛-in.	3/16in.	¼-in.	⅜-in.
	s. d.	s. d.	s. d.	s. d.
Each	0 10	0 11	1 0	1 6

GLASS SLATES.

Two holes in each.

PLAIN ROLLED PLATE.	⅛-in.	3/16in.	¼-in.	⅜-in.
	s. d.	s. d.	s. d.	s. d.
Duchess ... 24 by 12in.	1 3	1 6	1 9	2 1
Small Duchess 22 by 12in.	1 2	1 5	1 8	2 9
Countess ... 20 by 10in.	0 11	1 1	1 3	1 6
Large Ladies 16 by 10in.	0 9	0 11	1 0	1 3
Ladies ... 16 by 8in.	0 8	0 9	0 10	1 0

GLAZING REQUISITES.

DIAMONDS—	s. d.
No. 1 for Sheet Glass .. .. each	11 6
No. 2 for Sheet Glass .. .. each	14 0
No. 3 for Sheet Glass .. .. each	17 6
No. 4 for Sheet Glass .. .. each	21 0
No. 5 for Plate Glass .. .. each	27 6
No. 6 for Plate Glass .. .. each	33 0
No. 7 for Plate Glass .. .. each	39 0
Glazing Hammers .. .. each	2 6
Glazing Knives .. .. each	1 3
Chipping Knives .. .. each	1 3
Hacking Knives .. .. each	1 3
Stopping Knives .. .. each	1 3
Chisel Knives .. .. each	1 3
36-inch Lath .. ..bundle	3 9

T Squares, with scale—24in., 4/6; 30in., 5/6.

Best Putty, 10/- per cwt.

14lb. Kegs, 2/3 each | 28lb. Kegs, 4/- each.
56lb. Kegs, 7/- each.

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GREASE FOR AGRICULTURAL PURPOSES.

Grease in 112lb. Tub ... ... per cwt. 18/- Tub included.

Grease in 56lb. Tub ... ... each 9/- Tub included.

Grease in 28lb. Tub ... ... each 4/6 Tub included.

AXLE GREASE.

Free from Petroleum, Parraffin, Acid, Gum, Water, or any Gritty Matter. Will not melt in Summer or freeze in Winter.

1 Cwt. Keg ... ... £1 9 0 Keg included.

GRINDSTONES WITH FRAMES.

	Diameter.	Thickness.	Price.
No. 1 Fine Grit Grindstone on Wood Frame	24″ ...	3″ ...	£1 10 0
No. 2 Grindstone on Wood Frame	26″ ...	3″ ...	£1 15 0
No. 3 Grindstone on Iron Frame with Anti-friction Rollers, to work by hand or foot	26″ ...	4″ ...	£3 3 0
No. 4 Grindstone on Wood Frame with Anti-friction Rollers, adapted for General Purposes	36″ ...	5″ ...	£4 10 0
No. 5 Grindstone on Iron Frame, for hand, foot, or steam power	36″ ...	5″ ...	£5 10 0
No. 6 Grindstone on Iron Frame for ditto	42″ ...	5″ ...	£7 10 0

Pulley for Steam Power extra 10/-

GRINDSTONES (Stones only).

	Diameter.	Thickness.		Price.
Best Yorkshire Stones	24″ ...	3½″	each	£0 7 6
Ditto	27″ ...	5″	each	£0 9 0
Ditto	30″ ...	5″	each	£0 12 0
Ditto	33″ ...	5″	each	£0 17 6
Ditto	36″ ...	5″	each	£1 0 0
Ditto	42″ ...	5″	each	£1 10 0
Ditto	48″ ...	6″	each	£2 0 0

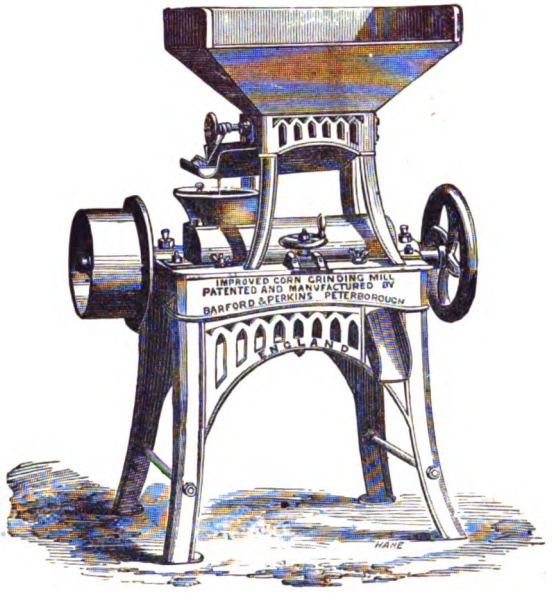
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BARFORD AND PERKINS'

IMPROVED PATENT ROYAL "BURY" AND "OXFORD" FIRST PRIZE

CORN GRINDING MILL.

Will Grind Wheat, Barley, Beans, Peas, Oats, Linseed, Maize, Lentils, Spices, &c., for feeding purposes, Fifty per cent. faster and with Thirty per cent. less power, than Mill Stones.



The extreme portability, simplicity, and cheapness of these Mills contrast most favourably with the ponderous and costly machines, now in use for similar purposes, where the tear and wear is great and constant skilled attention is required; whereas in the patent Mill here described, there is but one running spindle working in two bearings made of anti-friction metal which never heat, and last many years. The Mill moreover being constructed without any cog wheel or pinion whatever, it is next to impossible that accidents can happen to the attendants through carelessness.

Summary of Prices:—

No. 1.—Patent Corn Grinding Mill, on wood frame, suited for steam or other power of four horses and upwards...	£20	0	0
No. 2.—Ditto Ditto, but mounted on a high stand to grind into a sack...	£22	0	0
No. 3.—Ditto Ditto, (Bury Prize Mill) mounted on new massive iron framing, will grind upwards of 25 bushels of fine meal per hour, adapted for 6 to 8-H.P. Engines	£22	0	0
No. 4.—Ditto Ditto, Smaller and adapted for engines of 4 or 5-H.P., will grind 20 bushels per hour	£18	0	0
No. 5.—Ditto Ditto, Smaller and adapted for horse gears of three or four horses, and small engines	£16	0	0
No. 6.—Ditto Ditto, (as No. 1) on wood frame and portable travelling carriage	£27	0	0
No. 7.—Ditto Ditto, (as No. 3) massive iron frame mill, mounted on wood framed travelling carriage	£30	0	0
If with Dressing Machine attached... ... ... extra	£10	0	0
No. 8.—Ditto Ditto, similar to No. 3, but larger; will grind upwards of 30 bushels of fine Wheat or Barley Meal per hour	£25	0	0

Smaller Sizes (New Series), 1876.

No. B.—Patent Grist Mill, on iron frame, suited for one or two-horse gears...	£12	0	0
No. C.—Ditto Ditto, suited for two or three horse power gears or small engines	£14	0	0

The grinding surfaces are made of **cold blast white iron,** extremely hard and durable.

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W. N. NICHOLSON & SONS'.

PATENT SAFETY GRIST MILLS.

(For Horse or Steam Power.)



PRICES:—

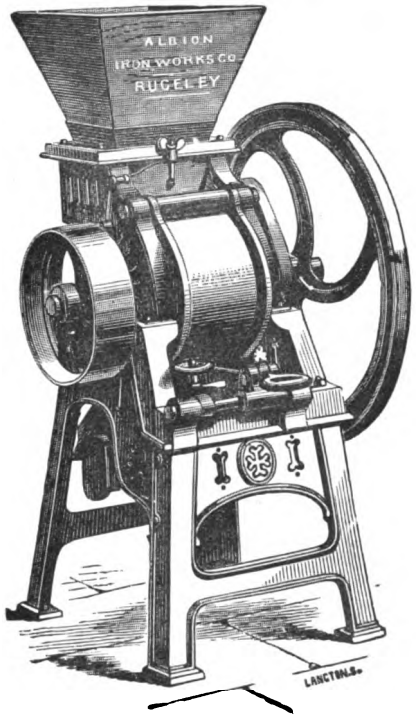
No. 0 Mill, for 2 horse gear or engine; will kibble 40 bushels, or grind eight bushels per hour	£10 0 0
Ditto fitted with Guide Pulleys	£11 10 0
No. 1 Mill, for 3-horse gear or 2½ or 3-horse engine; will kibble about 50 bushels, or grind 10 bushels per hour	£12 10 0
Ditto fitted with Guide Pulleys	£14 0 0
No. 2 Mill, for 4 to 6-horse engine; will kibble about 60 bushels or grind about 20 bushels per hour	£20 0 0
Ditto fitted with Guide Pulleys	£22 0 0

The speed of No. 0 and No. 1 Mills should not exceed 450 revolutions per minute—and of No. 2 Mill 350 to 400.

Awarded Special Silver Medal of the Royal Agricultural Society of England at Liverpool, 1877.

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ALBION IRON WORKS—BRITISH GRIST MILLS,
WITH SAFETY CONCAVE.



The Grinding Surfaces of these Mills are made of a special Mixture of Metal, cast on chills ensuring great durability.

Tabular Statement of Sizes and Capabilities of the British Grist Mills:—

Power.	Mark.	Diameter of Grinding Drum.	Width of Grinding Surfaces.	Revolutions per Minute.	Suitable Pulley 4in. wide.	Size of Spindle.	Approximate Quantities per hour in Bushels.										Prices without Pulley.
							Split Beans.	Crushed Oats.	Kibbled Indian Corn.	Kibbled Barley.	Bean Meal.	Oat Meal.	Indian Meal.	Barley Meal.	Pea Meal.	Wheat Flour, suitable for dressing.	£ s. d.
3-H.P.	B. M. A.	12in.	9in.	300	14in.	1⅞in.	36	36	32	32	16	18	16	16	16	18	15 0 0
2-H.P.	B. M. P.	12in.	7in.	300	12in.	1½in.	28	28	24	24	12	14	12	12	12	14	13 10 0
2-H.P.	B. M.	12in.	6in.	300	12in.	1½in.	16	16	16	16	8	10	8	8	8	8	12 10 0
6-H.P.	B. M. O.	—	—	300	—	—	120	100	120	100	60	50	60	60	60	60	28 0 0

The B. M. A. Mill is recommended as the simplest, cheapest, and most durable and useful Machine manufactured for **Millers' purposes,** especially for kibbling Beans, Indian Corn, Peas, and Barley, preparatory to grinding with Stones, the power required being so small, and the saving in the wear of the Stones so manifest.

J. B. Grist Mill for hand power **£5 5 0**

J. E. Grist Mill for 1-horse power **£7 10 0**

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SINGLE MUZZLE-LOADING GUNS.

Single Barrel Gun—Back Action, Bridle Lock, Spanish-form Barrel, Tailpin, full mounted			£ 0 19 0
Ditto	Ditto	with Break-off ditto	£ 1 2 6
Ditto	Ditto	Skelp-twist Barrel—Patent Breech, ditto	£ 1 5 6
Ditto	Ditto	Ditto, Superior, with Shoulders	£ 1 8 0
Ditto	Ditto	Westley Bar Lock, ditto	£ 1 11 6
Ditto	Ditto	Bar-side Lock, ditto	£ 1 15 6
Ditto	Ditto	Best Damascus Barrel, ditto	£ 3 7 6

DOUBLE MUZZLE-LOADING GUNS.

Double Barrel Gun—Back Action, Bridle Locks, Skelp-twist Barrels — Patent Breeches and Break-off,		Superior	£ 2 0 0
Ditto	—Back Action, Westley Bar Locks,	ditto ditto	£ 2 4 0
Ditto	—Back Action, Bar Side Locks	ditto ditto	£ 2 8 0
Ditto	—Back Action, Box Furniture—Superior		£ 2 15 0
Ditto	—Back Action, ditto, Chequered Fore-end and Steel Escutcheons, Steel Locks		£ 3 0 0
Ditto	—Back Action, Steel Locks	ditto ditto—Figured Barrels	£ 3 7 6
Ditto	—Back Action, Fancy Bridle Locks, Sunk Breeches—Superior Damascus Barrels		£ 7 0 0
Ditto	—Back Action, Forged Cocks, Silver Bar—Fine Damascus Barrels		£ 9 0 0
Ditto	—Back Action, best throughout		£12 0 0

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SINGLE BREECH-LOADING GUNS.

PIN FIRE.

Single Barrel Gun	—Back Action Lock, Double Grip Action, Skelp-twist Barrel, Steel Lock	£ 4 0 0
Ditto	—Back Action Lock, Double Grip Action, Stub Damascus Barrel, Steel Lock	£ 4 15 0
Ditto	—Back Action Lock, Snap Action, Side or Under Lever, Stub Damascus Barrel	£ 5 10 0
Ditto	—Back Action Lock, Double Grip Action, Damascus Barrel	£ 7 0 0
Ditto	—Back Action Lock, Snap Action, Side or Under Lever, Damascus Barrel	£ 7 5 0
Ditto	—Back Action Lock, Snap Action, Top Lever, Damascus Barrel ...	£ 7 10 0
Ditto	—Bar let in Lock, Double Grip Action, Damascus or Silver Steel Barrel	£ 8 0 0
Ditto	—Bar let in Lock, Snap Action, Side or Under Lever, Damascus or Silver Steel Barrel	£ 8 15 0
Ditto	—Bar let in Lock, Snap Action, Top Lever, Damascus or Silver Steel Barrel	£ 9 15 0

CENTRAL FIRE,

Single Barrel Gun	—Back Action Lock, Double Grip Action, Skelp-twist Barrel, Steel Lock	£ 4 7 6
Ditto	—Back Action Lock, Double Grip Action, Stub Damascus Barrel, superior	£ 5 0 0
Ditto	—Back Action Lock, Snap Action, Side or Under Lever, Stub Damascus Barrel	£ 5 15 0
Ditto	—Back Action Lock, Snap Action, Top Lever, Stub Damascus Barrel	£ 6 10 0
Ditto	—Back Action Lock, Double Grip Action, Damascus Barrel	£ 7 0 0
Ditto	—Bar let in Lock, Double Grip Action, Damascus Barrel	£ 8 15 0
Ditto	—Bar let in Lock, Snap Action, Side or under Lever, Damascus Barrel	£ 9 15 0
Ditto	—Bar let in Lock, Snap Action, Top Lever, Damascus Barrel... ...	£10 10 0
Ditto	—Ditto, best throughout	£12 0 0

If for No. 10 Cartridge, 10/6 extra. Rebounding Locks, 3/- extra. Snap Fore-end Bolts, 10/- extra.

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DOUBLE BREECH-LOADING GUNS.

PIN FIRE.

Double Barrel Gun	—Back Action Locks, Double Grip Action, Skelp-twist Barrels ...	£ 4 15 0
Ditto	— Ditto, ditto ditto, superior ...	£ 5 10 0
Ditto	—Back Action Locks, Snap Action, Side or Under Lever, ditto ...	£ 6 0 0
Ditto	—Back Action Locks, ditto Top Lever ditto ...	£ 6 10 0
Ditto	—Back Action Locks, Steel-freed Locks, Double Grip Action, Damascus Barrels	£ 7 0 0
Ditto	—Back Action Locks, Steel-freed Locks, Snap Action, Side or Under Lever, Damascus Barrels	£ 7 10 0
Ditto	—Back Action Locks, ditto ditto Top Lever, Damascus Barrels	£ 8 0 0
Ditto	—Bar let in Locks, Double Grip Action, Damascus Barrels	£ 8 0 0
Ditto	—Bar let in Locks, Snap Action, Side or Under Lever, ditto... ...	£ 8 15 0
Ditto	—Bar let in Locks, ditto Top Lever, ditto	£ 9 5 0
Ditto	—Bar let in Locks, Double Grip Action, Fine Damascus Barrels ...	£ 9 5 0
Ditto	—Bar let in Locks, Snap Action, Side or Under Lever, ditto ...	£ 9 15 0
Ditto	—Bar let in Locks, ditto, Top Lever, ditto...	£10 10 0
Ditto	—Bar let in Locks, Double Grip Action, ditto, Superior, with Snap Fore-end Bolts	£11 0 0
Ditto	—Bar let in Locks, Snap Action, Side or Under Lever, Superior with Snap Fore-end Bolts	£11 10 0
Ditto	—Bar let in Locks, Snap Action, Top Lever, Superior with Snap Fore-end Bolts	£12 0 0
Ditto	—Bar let in Locks, Double Grip Action, best throughout, ditto ...	£15 15 0
Ditto	—Bar let in Locks, Snap Action, Side or Under Lever, ditto, ditto	£16 10 0
Ditto	—Bar let in Locks, Snap Action, Top Lever, ditto, ditto	£17 5 0

Snap Fore-end Bolts to Guns, where not specified, 10/- extra.

Pistol Hand Stocks, 15/- to 21/- extra. Brazier Locks, 40/- extra.

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DOUBLE BREECH-LOADING GUNS.

PIN FIRE—(CONTINUED).

Double Barrel Gun	—Snap Action, Side Lever	£	4	4	0
Ditto	—Double Grip Action, Skelp-twist Barrels	£	5	0	0
Ditto	—Double Grip Action, Skelp-twist Barrels, Superior	£	5	15	0
Ditto	—Snap Action, Side or Under Lever, Skelp-twist Barrels, Superior	£	6	10	0
Ditto	—Snap Action, Top Lever, Skelp-twist Barrels, Superior	£	7	0	0
Ditto	—Steel-freed Locks, Double Grip Action, Damascus Barrels	£	6	15	0
Ditto	—Steel-freed Locks, Snap Action, Side or Under Lever, Damascus Barrels	£	7	5	0
Ditto	—Steel-freed Locks, Snap Action, Top Lever, Damascus Barrels ...	£	7	15	0
Ditto	—Leg-over Locks, Double Grip Action, Percussion Fence, Damascus Barrels	£	7	10	0
Ditto	—Leg-over Locks, Double Grip Action, Best Percussion Fence ...	£	8	15	0
Ditto	—Leg-over Locks, Snap Action, Side or Under Lever, Best Percussion Fence, Damascus Barrels	£	9	15	0
Ditto	—Leg-over Locks, Snap Action, Top Lever, Best Percussion Fence, Damascus Barrels	£10	10		0
Ditto	—Thomas's Patent, Top Lever, Damascus Barrels	£11	0		0
Ditto	—Thomas's Patent, ditto ditto Superior	£12	0		0
Ditto	—Thomas's Patent, ditto ditto Best	£13	10		0
Ditto	—Double Bolt ditto ditto	£11	0		0
Ditto	—Double Bolt ditto ditto Superior	£12	0		0
Ditto	—Double Bolt ditto ditto Best...	£13	10		0
Ditto	—Hall's Patent ditto ditto	£11	0		0
Ditto	—Hall's Patent ditto ditto Superior	£12	0		0
Ditto	—Hall's Patent ditto ditto Best	£13	10		0

Rebounding Locks to any of the above Guns, 6/- extra.

Snap Fore End Bolts, 10/- extra.

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DOUBLE BREECH-LOADING GUNS.

CENTRAL FIRE, BAR LOCKS.

Double Barrel Gun	—Double Grip Action, Damascus Barrels	£ 8 0 0
Ditto	—Snap Action, Side or Under Lever, Damascus Barrels...	£ 8 15 0
Ditto	—Snap Action, Top Lever, ditto	£ 9 15 0
Ditto	—Leg-over Locks, Double Grip Action, Percussion Fence, Damascus Barrels	£10 10 0
Ditto	—Leg-over Locks, Snap Action, Side or Under Lever, Percussion Fence, Damascus Barrels	£11 0 0
Ditto	—Leg-over Locks, Snap Action, Top Lever, Percussion Fence, Damascus Barrels	£12 0 0
Ditto	—Thomas's Patent. ditto ditto ditto ...	£12 10 0
Ditto	—Double Bolt, ditto ditto ditto ...	£12 10 0
Ditto	—Hall's Patent, ditto ditto ditto ...	£12 10 0
*Ditto	—Double Grip Action, Superior...	£14 0 0
*Ditto	—Snap Action, Side or Under Lever, Superior...	£15 10 0
*Ditto	—Snap Action, Top Lever, ditto	£17 0 0
*Ditto	—Thomas's Patent, ditto ditto	£18 5 0
*Ditto	—Double Bolt, ditto ditto	£18 5 0
*Ditto	—Hall's Patent, ditto ditto	£18 5 0

Rebounding Locks and Snap Fore-end Bolts to all Guns marked thus *.

Rebounding Locks to other Guns, 6/- extra. Snap Fore-end Bolts to other Guns, 10/- extra.

Pistol Hand Stocks, 15/- to 21/- extra.

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DOUBLE BREECH-LOADING GUNS.

CENTRAL FIRE. BAR LOCKS.—(CONTINUED.)

Double Barrel Gun	—Double Grip Action, Fine Damascus Barrels	£16	15	0
Ditto	—Snap Action, Side or under Lever, Fine Damascus Barrels	£17	10	0
Ditto	—Snap Action, Top Lever, ditto	£18	5	0
Ditto	—Thomas's Patent, Top Lever, ditto	£19	10	0
Ditto	—Double Bolt, ditto, ditto	£19	10	0
Ditto	—Hall's Patent, ditto, ditto	£19	10	0
Ditto	—Double Grip Action, Best throughout	£19	10	0
Ditto	—Snap Action, Side or Under Lever, Best throughout	£21	0	0
Ditto	—Thomas's Patent, Top Lever, ditto	£22	5	0
Ditto	—Double Bolt, ditto ditto	£22	5	0
Ditto	—Hall's Patent, ditto ditto	£22	5	0
Ditto	—Westley Richard's Patent, Top Lever, ditto	£28	0	0
Ditto	—Ditto, ditto, Hammerless, Best throughout	£31	0	0
Ditto	—Patent Double Lump, Back Action Locks, Side or Under Lever ...	£14	0	0
Ditto	—Ditto, Bar Form Locks, ditto ...	£17	0	0
Ditto	—Ditto, ditto, ditto, Best ...	£19	10	0
Ditto	—Ditto, ditto, Top Lever	£19	10	0
Ditto	—Patent Double Lump and Double Bolt, New Pattern, Bar Form Locks, Top Lever	£22	5	0
Ditto	—Ditto, ditto, ditto, ditto, Best	£25	4	0
Ditto	—"Acme" Hammerless, with Safety Bolt and Indicators...	£16	0	0
Ditto	—Ditto ditto, ditto, ditto, Best... ...	£19	10	0

All these Guns are fitted with Snap Fore-end Bolts and Rebounding Locks. Pistol Hand Stock 30/- extra. Brazier Locks 40/- extra.

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BREECH-LOADING ROOK AND RABBIT RIFLES.

Turn-over Block, for .380 Central Fire Cartridge	£ 2 5 0
Remington Pattern ditto ditto	£ 2 5 0
Remington Pattern ditto ditto	£ 2 15 0
Tranter's Patent, for .320 or .380 Cartridge	£ 4 15 0
Snider's Patent, for .320, .380, .430, or .450 Cartridge...	£ 4 15 0
Martini's Patent for .380 Cartridge	£ 5 0 0
Thomas's Patent, Top Lever...	£ 7 10 0

SINGLE BREECH-LOADING EXPRESS AND SPORTING RIFLES.

Martini Henry's Patent Carbine, for .500/.450 Cartridge...	£ 7 0 0
Martini Henry's Express Rifle, for .500/.450 or .577/.450 Cartridge	£12 0 0
Martini Henry's ditto ditto ditto Superior, with Orthoptic and Wind Guage Sights	£15 0 0
Soper's Patent Express Rifle...	£17 0 0

DOUBLE BREECH-LOADING EXPRESS AND SPORTING RIFLES.

CENTRAL FIRE.

Double Rifle—Back Action Locks, Double Grip Action, Stub Damascus Barrels	£17 0 0
Ditto —Bar let in Locks, Snap Action, Side or Under Lever, Damascus Barrels—Best throughout	£28 0 0
Ditto —Bar-form Locks, Patent Double Lump, Damascus Barrels, Best throughout	£31 10 0

DOUBLE BREECH-LOADING RIFLE AND SHOT GUNS.

CENTRAL FIRE.

Double Rifle and Shot Gun—Back Action Locks, Double Grip Action, Stub Damascus Barrels	£12 0 0
Double Rifle and Shot Gun—Bar let in Locks, ditto Damascus Barrels, Superior...	£20 0 0
Double Rifle with extra Shot Barrels, Best Damascus Barrels	£34 0 0

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SINGLE MUZZLE-LOADING DUCK GUNS.

Single Gun—Back Action Lock, Skelp-twist Barrel, 9 to 12 bore ... ... £ 2 15 0

Ditto – Bar Lock, Stub-twist Barrel, 6 to 9 bore ... ...£4 to £ 5 0 0

DOUBLE MUZZLE-LOADING DUCK GUNS.

Double Gun—Bar Locks, Skelp-twist Barrels, 9 to 12 bore ... ... £ 3 10 0

Ditto —Ditto, Stub-twist Barrels, 9 to 12 bore ... ... £ 5 10 0

Ditto —Ditto, Figured Barrels, 6 to 9 bore ... ... £6 15 0 to £ 9 0 0

SINGLE BREECH-LOADING DUCK GUNS.

Single Gun—Back Action Lock, Double Grip Action, Stub Damascus Barrel, No. 8 Cartridge ... ... £ 8 15 0

Ditto —Ditto, ditto Percussion Fence, ditto, ditto £ 9 15 0

Ditto —Ditto, Snap Action, Top Lever ditto, ditto £12 10 0

Ditto —Ditto, Double Grip Action, ditto, No. 4 Cartridge £14 0 0

Ditto —Ditto, Snap Action, Top Lever, Damascus Barrel, ditto £18 0 0

DOUBLE BREECH-LOADING DUCK GUNS.

Double Gun—Back Action Locks, Double Grip Action, Damascus Barrels, No. 10 Cartridge £8 15 0

Ditto —Ditto, ditto, ditto, superior, ditto ... £10 10 0

Ditto —Ditto, Snap Action, Top Lever, ditto ditto ... £13 0 0

Ditto —Bar let in Locks, Double Grip Action, Fine Damascus Barrels, No. 10 Cartridge £17 0 0

Ditto —Ditto, ditto, ditto, Best throughout £20 0 0

PUNT GUNS.

Muzzle-loading Punt Gun, Twisted Barrel ... ... 1⅛″ bore £28 0 0

Ditto, ditto ... ... 1¼″ ,, £35 0 0

Ditto, ditto ... ... 1½″ ,, £40 0 0

	bore 1⅛″	1¼″	1½″
Breech-loading Punt Gun, Drop Down Action, Twisted Barrel,	£35 ...	£40 ...	£47
Ditto Snider Patent, ditto	£38 ...	£43 10	£54

Patent Breech-Loading Punt Gun, with Trunnions or Recoil Frame, 1½″ bore, Best ... £65 0 0

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ALARM GUNS.

Alarm Guns for Shutters or Doors		£0	9 6
Alarm Guns for Orchards, to fix on trees	4/- to	£0	11 6
Falling Alarm Gun		£0	11 6
Binger's Breech-Loading Alarm Gun		£0	13 6

SINGLE PISTOLS.

Single Bird Scaring Pistol	each	£0	10 0
Single Pistols—Wrought Actions, Plain, Square, or Round Hands	per pair	£0	13 6
Single Pistols—Wrought Action, Chequered Round Hands	per pair	£0	16 0

BREECH-LOADING SALOON PISTOLS.

Saloon Pistols—Plain Round Hand	each 14/- to	£0	18 0
Saloon Pistols—Chequered ditto	each 18/- to	£1	2 0
Saloon Pistols—Tranter's Patent	each	£2	0 0
Colt's Deringer Pistols, .410 Cartridge	per pair	£2	8 0

BREECH-LOADING REVOLVERS.

Smith & Wesson's Patent, .230, Plated		£2	15 0
Ditto .380, Extracting Plated		£4	15 0
Ditto .440, Army Pattern		£5	10 0
American O.K, .230		£1	1 0
Small Revolver—Double Action, .230 Blued, in Cigar Case		£1	5 0
Small Revolver—Double Action, .230 Blued, Nickel Plated, Ivory Stock in Cigar Case, with Nickel Plated Mounts		£1	17 6
Constabulary—Double Action, .320, .380, or .450 Blued		£1	4 0
Ditto — Ditto ditto Nickel Plated		£1	7 0
Tranter's Patent Blued, .320, .380, or 450		£3	7 6
Patent Extracting and Rebounding .320, .380, or 450 Blued —Best		£6	0 0
Patent Extracting and Rebounding, .500 Blued—Best		£ 6	10 0

Oak or Mahogany Case and Fittings complete, 10/6 to 15/- extra.

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CARTRIDGE BAGS, BELTS, AND GUN CASES.

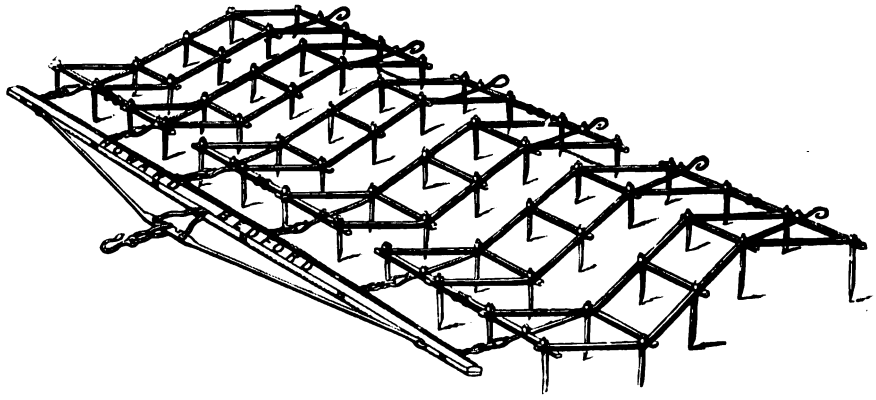
Brown Canvas Bags to hold	30 Cartridges	... ...	each	£0	5	6
Ditto	50 Cartridges	... ...	each	£0	5	9
Ditto	75 Cartridges	... ...	each	£0	7	0
Ditto	100 Cartridges	... ...	each	£0	8	9
Moleskin Bags to hold	50 Cartridges...	... ...	each	£0	3	4
Ditto	50 Cartridges...	... ...	each	£0	4	0
Drab Waterproof Bag with Pocket		... ...	each	£0	9	6
Enamelled Leather to hold	30 Cartridges...	... ...	each	£0	10	9
Brown Leather Belt to hold	24 Cartridges...	... ...	each	£0	7	0
Brown Leather Belt to hold	30 Cartridges, with Steel Spring Clips	... ...	each	£0	14	0
Cartridge Magazines, Black Canvas, to hold	200 Cartridges ...	... ...	each	£0	13	6
Ditto ditto ,,	300 Cartridges ...	... ...	each	£0	16	6
Ditto ditto ,,	400 Cartridges ...	... ...	each	£1	0	0
Ditto ditto ,,	500 Cartridges ...	... ...	each	£1	3	0
Cartridge Magazines, Solid Leather ,,	200 Cartridges ...	... ...	each	£1	5	0
Ditto ditto ,,	300 Cartridges ...	... ...	each	£1	9	0
Ditto ditto ,,	400 Cartridges ...	... ...	each	£1	15	0
Ditto ditto ,,	500 Cartridges ...	... ...	each	£2	1	0
Waterproof Gun Covers, Best, Drab or Brown Canvas		... ...	each	£0	6	0
Ditto Brown Canvas		... ...	each	£0	6	6
Solid Brown Leather Holster with Lock and Sling		... ...	each	£1	7	0
Solid Black Leather Pistol Holster and Belt		... ...	each	£0	10	9

GUN CASES.

Mahogany or Oak Gun Cases		... ...	each	£0	16	9
Mahogany or Oak Gun Cases, with Ring Handles and Brass Corners		... ...	each	£1	4	0
Best Black Canvas Registered Box Pattern, Straps Round, Flat		... ...	each	£1	1	6
Ditto ditto	with Tray, ditto	... ...	each	£1	8	0
Solid Leather ditto	ditto	... ...	each	£1	18	0
Ditto ditto	ditto—Superior	... ...	each	£2	5	0
Oak, Covered with Solid Leather, Straps Round, Flat		... ...	each	£2	7	0
Ditto ditto	Spring Lock and Brass Corners...	... ...	each	£2	13	6
Ditto ditto	ditto Best	... ...	each	£3	3	0

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HOWARD'S ZIGZAG HARROWS.



These Harrows are so widely known that any lengthened description is unnecessary. They are strong, durable, and well adapted for all kinds of work. The tines are fitted into the bars in a simple manner, and by means of a guard to the nuts they are effectually prevented from shaking loose.

Harrows as above, with 4 Beams each and 5 rows of Tines with Whippletree, complete.

No. 00, adapted for one horse on very light land, 7 feet wide, average weight ¾ cwt. ... £2 12 6
No. 0, adapted for harrowing-in seeds, and for general use on light land, 7½ feet wide, average weight 1 cwt. ... £3 0 0
No. 14, recommended as finishing or seed Harrows on sand and light land, 8½ feet wide average weight 1¼ cwt. ... £3 5 0
No. 12, recommended as general seed Harrows, 9½ feet wide, average weight 1¾ cwt. ... £3 17 6
No. 11, adapted for three horses, but frequently used with a pair, 10 feet wide, average weight 2¼ cwt. ... £4 7 6

Prices with 4 Beams and 6 rows of Tines with Whippletree, complete.

No. 15, recommended as seed Harrows, 8½ feet wide, average weight 1¼ cwt.... ... £3 12 6
No. 13, adapted for a pair of Horses, 9½ feet wide, average weight 1¾ cwt. ... £4 7 6
No. 10, adapted for three horses, 10½ feet wide, average weight 2¾ cwt. ... £5 10 0

Prices with 3 Beams and 5 rows of Tines with Whippletree, complete.

No. 12, same strength as the 4-beam No. 12, 7½ feet wide, average weight 1¼ cwt. ... £3 7 6
No. 11, same strength as the 4-beam No. 11, but for a pair of horses, 7½ feet wide, average weight 1¾ cwt. ... £3 17 6

Prices with Three Beams, and 6 Rows of Tines, with Whippletree, complete.

No. 10, same strength as the 4-beam No. 10, but more adapted for uneven land, 8 feet wide, average weight 2¼ cwt. ... £4 10 0
No. 10, same as preceding, but with four Harrows to the set, 10½ feet wide, average weight 2¾ cwt. ... £5 10 0

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HOWARD'S JOINTED HARROWS.

These Harrows are the same in principle as those on the preceding page, but are furnished with joints in the centre of each, which allow them to adapt themselves to the form of the ridges or any unevenness of the surface. By a simple arrangement, these joints may be instantly locked, or allowed as much play as required, but in very rough work they are better fastened.

Prices, with Four Beams, and 5 rows of Tines, with Whippletree, complete.

No. 0, adapted for harrowing-in seeds, and for general use on light land, 7½ feet wide, average weight 1 cwt.... ... ... £3 6 0
No. 14, recommended as finishing or seed Harrows on sand and light land, 8½ feet wide, average weight 1¼ cwt. £3 11 0
No. 12, recommended as general seed Harrows, 9½ feet, average weight 1¾ cwt. £4 3 6
No. 11, adapted for three horses, but frequently used with a pair, 10 feet wide, average weight 2¼ cwt. £4 13 6

Prices, with Four Beams, and 6 rows of Tines, with Whippletree, complete.

No. 15, recommended as seed Harrows, 8½ feet wide, average weight 1½ cwt. £3 18 6
No. 13, adapted for a pair of horses, 9½ feet wide, average weight 1¾ cwt. £4 13 6
No. 10, adapted for three horses, 10½ feet wide, average weight 2¾ cwt.... ... ... £5 16 0

HOWARD'S

ZIGZAG HARROWS WITH TWO BEAMS.

These Harrows are specially intended for land ploughed in narrow ridges or **stitches** of eight ten, or twelve furrows. The Whippletree is arranged for the horses to walk in the furrows between the ridges. The Harrows having but two beams drop into the furrows and adapt themselves to the shape of the ridge.

No. 18, with Whippletree, complete, 4 Harrows to the set, for 10-furrow stitches, 9½ feet wide, weight 2½ cwt. £4 12 6
No. 18, with Whippletree, complete, 5 Harrows to the set, for 12-furrow stitches, 11 feet wide, weight 3 cwt. £5 7 6
No. 18, with Whippletree, complete, 6 Harrows to the set, for 14-furrow stitches, 12½ feet wide, weight 3½ cwt. £6 2 6
No. 19, with Whippletree, complete, 5 Harrows to the set, for 8-furrow stitches, 7¾ feet wide, weight 2 cwt. £4 12 6
No. 19, with Whippletree, complete, 6 Harrows to the set, for 10-furrow stitches, 9¼ feet wide, weight 2¼ cwt. £5 7 6
No. 19, with Whippletree, complete, 7 Harrows to the set, for 12-furrow stitches, 11 feet wide, weight 2¾ cwt. £6 2 6
No. 20, with Whippletree, complete, 5 Harrows to the set, for 8-furrow stitches, 7¾ feet wide, weight 1¾ cwt. £4 5 0
No. 20, with Whippletree, complete, 6 Harrows to the set, for 10-furrow stitches, 9½ feet wide, weight 2 cwt. £4 17 6
No. 20, with Whippletree, complete, 7 Harrows to the set, for 12-furrow stitches, 11 feet wide, weight 2¼ cwt. £5 10 0
No. 21, with Whippletree, complete, 5 Harrows to the set, for 8-furrow stitches, 7¾ feet wide, weight 1¼ cwt. £3 10 0
No. 21, with Whippletree complete, 6 Harrows to the set, for 10-furrow stitches, 9½ feet wide, weight 1¾ cwt. £4 2 6
No. 21, with Whippletree, complete, 7 Harrows to the set, for 12-furrow stitches, 11 feet wide, weight 2 cwt. £4 15 0

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HOWARD'S ZIGZAG DRAG HARROWS.

These Harrows are made with long curved tines, very strong and durable, and are thoroughly adapted for heavy work. They can be used with three or four horses on rough fallows, and are made to draw backward or forward.

No. 18, with Whippletree, complete, 3 Harrows to the set, 9 feet wide, tines 9 inches long, average weight 2¼ cwt. £5 5 0

No. 17, with Whippletree, complete, 3 Harrows to the set, 10½ feet wide, tines 10 inches long, average weight 3¼ cwt. £6 10 0

No. 16, with Whippletree, complete, 2 Harrows to the set, 7½ feet wide, tines 12 inches long, average weight 2¾ cwt. £5 10 0

HOWARD'S DRAG HARROWS WITH HANDLES.

These are the same as the Drag Harrows above described, but furnished with handles, so that the tines can be pressed into the ground, or lifted out to clear them, as occasion may require. They are made with pointed or chisel-shaped tines, and can be used with three or four horses on rough fallows. They are very strong and durable, and for some work are more efficient than Scarifiers.

H 17, a pair of 3 beam Harrows with Whippletree, complete, 7 feet wide, average weight 2½ cwt. £4 15 0

H 17, a pair of 4 beam Harrows with Whippletree, complete, 9¼ feet wide, average weight 3 cwt. £6 0 0

H 18, with 4 beams in each Harrow, and Whippletree, complete, 8 feet wide, average weight 2¼ cwt. £6 0 0

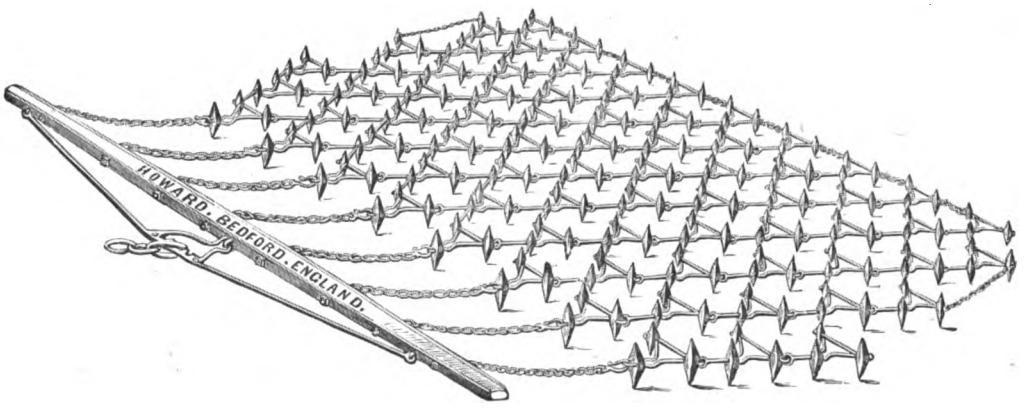
H 16, a pair of 3 beam Harrows with Whippletree, complete, 7½ feet wide, average weight 3 cwt. £5 17 6

H 16, a pair of 4 beam Harrows with Whippletree, complete, 9½ feet wide, average weight, 3½ cwt. £7 7 0

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HOWARD'S

NEW FLEXIBLE STEEL CHAIN HARROWS.



This New Patent Flexible Harrow is an improved form of Grass Harrow and will do as much work in going over a field once as the ordinary Chain Harrow will do at three times.

The tripods are constructed of wrought steel rods of an improved form, so that while the Harrow is very efficient upon grass, it is equally serviceable on arable land.

On arable land, the Harrow should be drawn the reverse way.

PRICES:—

F W 1, for one horse, to cover 6½ feet, average weight 1 cwt.... ... ... £2 10 0

F W 2, for two horses, to cover 8 feet, average weight 2 cwt... ... ... £4 0 0

F W 3, for three horses, to cover 12 feet, average weight 3½ cwt. £5 5 0

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HOWARD'S FLEXIBLE GRASS HARROWS.

This Harrow is composed of spiked tripods connected by wrought steel links, and its construction is so simple that a new tine or link can be put into the Harrow in the field. The points, which are case-hardened on each side, are longer on one side than the other, and are rounded off at the back. The Harrow may be worked backward or forward, or on either side, according to the state of the land and the kind of work to be done. The ground, therefore, is penetrated more or less, as may be desired. It will be found very useful for harrowing and cleaning Park roads.

PRICES:—

F 1, for one horse, to cover 6½ feet, average weight 1½ cwt. £2 2 0

F 2, for two horses, to cover 8 feet, average weight 2¼ cwt. £3 10 0

F 3, for three horses, to cover 12 feet, average weight 4 cwt. £4 15 0

DENTON'S

PATENT MACHINE-MADE CHAIN HARROWS.

These Harrows are recommended for Covering Seeds, Gathering Twitch, Spreading Manure, Dressing Grass Land, &c. They are made entirely of wrought iron. The links are turned by Patented Machinery and made perfectly square—the land being well worked and the Harrow rendered self-relieving.

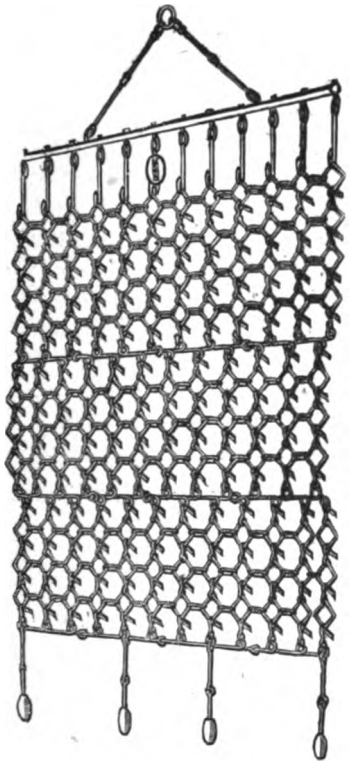
PRICES:—

Width. ft. in.	Length. ft. in.		General Purposes.	Heavy.
5 0 ...	7 6	... ...	£2 0 0	£2 5 0
6 0 ...	7 6	... ...	£2 10 0	£2 15 0
7 6 ...	7 6	with Flexible Expanders and Hooks	£3 5 0	£3 10 0
8 0 ...	7 6	... ...	£3 10 0	£3 15 0
10 0 ...	7 6	... ...	£4 5 0	—
..	7 6	... ...	£4 10 0	Specially for gathering twitch.
..	7 6	... ...	—	£4 5 0

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DENING'S

COMBINED TINE AND CHAIN HARROWS.



These Harrows are made to divide, so that the front or heavy part can be removed and the remainder used as a light Harrow. They are extensively used to prevent the growth of red weed in wheat, charlock in barley, &c.

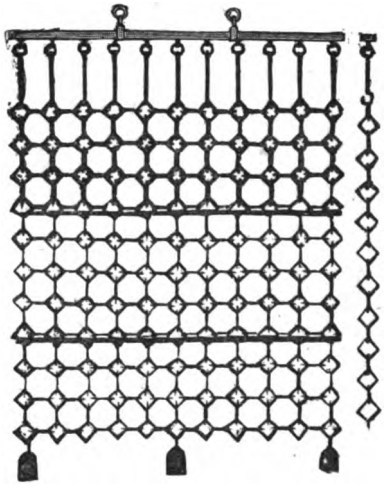
PRICES:—

	ft.	in.		ft.	in.		Combined Tine and Chain.
One-horse power...	5	0	wide by	7	6	long	£3 0 0
Two-horse „	7	6	„	7	6	„	£4 10 0
Two-horse „	8	6	„	7	6	„	£5 5 0
Three-horse „	10	0	„	7	6	„	£6 5 0
Four-horse „	12	6	„	7	6	„	£7 15 0

These Harrows can be made of round instead of square iron, but are not so efficient in working.

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PAGE'S
IMPROVED PATENT CHAIN HARROWS.



The peculiarity of these Implements consists in being made entirely of square wrought iron links, working loosely in each other. They have the property of cleaning themselves from all accumulation of soil, and are rendered self-relieving by the introduction of smaller iron in links, forming back part of Harrow, and as there is no rigid framework they follow closely the surface of the soil however uneven it might be, and are universally admitted to be the most efficient and useful Implement for covering seeds, pulverizing the surface of fallows, dressing in manure on grass land, and for gathering twitch or weeds of any description.

PRICES:—

Width.	Length.	Light.	Medium.	Heavy.
ft. in.	ft. in.	£ s. d.	£ s. d.	£ s. d.
6 0	7 6	2 10 0	2 15 0	3 2 6
7 6	7 6	3 0 0	3 5 0	3 12 6
8 6	7 6	3 10 0	3 15 0	4 2 6

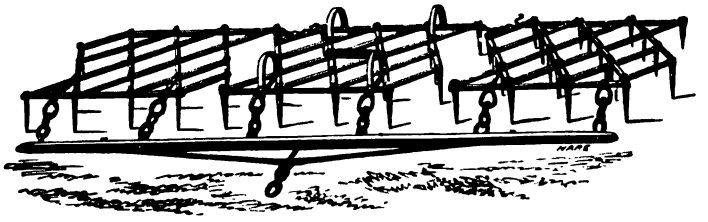
Harrows of any size or strength made to order.

Medium Harrows, 7ft. 6in. square, recommended for general purposes.

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PAGE'S (Late WILLIAMS')

PATENT DIAGONAL IRON HARROWS.



E. Page & Co.'s Harrows are manufactured upon the well-known principle first introduced by their predecessors, Messrs. Saunders and Williams. There is certainly no better system for the construction of Iron Harrows, owing to the weight being distributed equally over the whole surface and each tine pressing into the ground with uniform weight.

The heads of the tines are also made to hold the bars of the framework together, so that the greatest strain is brought to bear upon the very strongest part of the Harrows.

Price of Set of Three Harrows, with Pole, Chains, &c., complete.

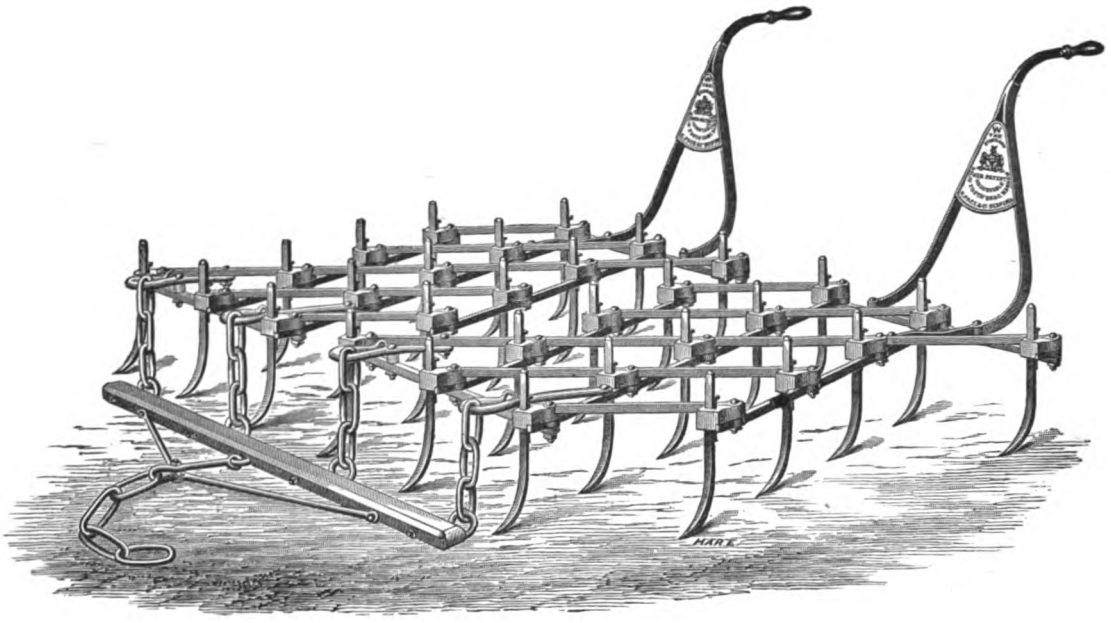
No. 0 0.	For very light land, 7ft. 9in. wide, for one horse, average weight 2 qrs. 20 lbs.	£2 2 0
No. 0.	Well adapted for general use on grass lands, and harrowing in seeds, &c., on light land, for one horse, weight 3 qrs. 7 lbs., width 7ft. 9in.	£2 7 6
No. 0½.	Very strong Seed Harrows, can be worked by one horse, width 8ft., weight 3 qrs. 24 lbs.	£3 0 0
No. 1.	A set of three compact Iron Harrows, and adapted for seed or finishing Harrows width 8ft. 3in., weight 1 cwt. 25 lbs....	£3 10 0
No. 1½.	Heavier and stronger than No. 1, adapted for two horses, recommended as general seed Harrows, width 7ft. 6in., weight 1½ cwt.	£3 15 0
No. 2.	Adapted for two or three horses, width 9ft. 8in., weight 2 cwt.	£4 0 0
No. 3.	Adapted for three horses, width 12ft., weight 2 cwt. 2 qrs. 7 lbs.	£5 0 0

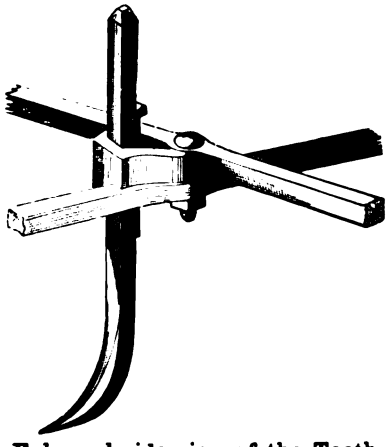
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E. PAGE & Co.'s

PATENT ADJUSTABLE SOLID TOOTH DRAG HARROWS.

The Stamp Duty of £100 was paid on these Harrows in 1875.





Enlarged side view of the Tooth and Fastening in the angle of the Cross Bars.

" The Frame of these Harrows consists of two zig-zag portions, each with a Handle attached to facilitate lifting up in the event of the Tines becoming clogged, and each portion carries fifteen Teeth. The peculiarity consists in the Tines being held in malleable sockets, which are placed between the Cross Bars ; the Bars are held together by a strong bolt and nut, and the Tines are fixed by a key. This arrangement allows of the removal of a portion of the Tines if desirable.

" The position of the Sockets and the form of the Teeth will be understood by the annexed sketch.

"The curved Tooth, together with the weight, causes these Harrows to act in the same manner as a light Cultivator, to to which they are closely allied."

The Harrows can be supplied with either Duck Feet or Spud Points, if required, at the same price.

Pair of E Heavy Drag Harrows, covering 8ft., Tines 18 inches long, weight 5 cwt., suitable for Steam Cultivation or Horse Power on heavy land £8 0 0

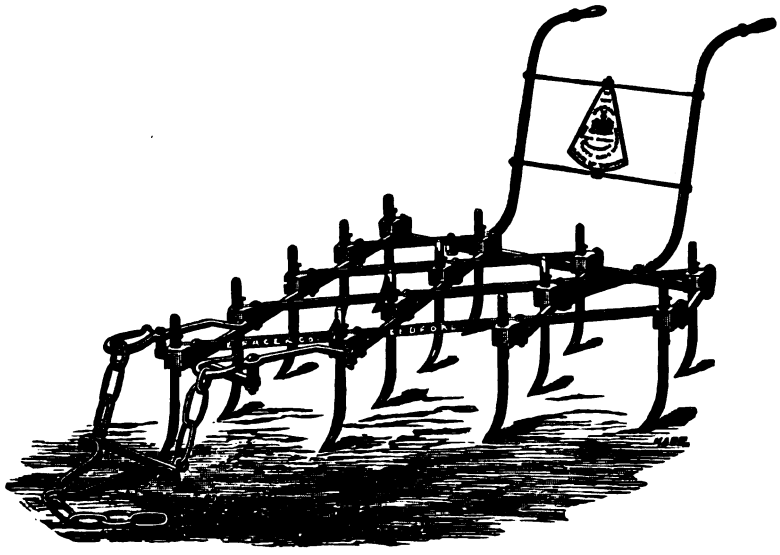
Pair of W Medium Drag Harrows, covering 8ft., Tines 16 inches long, weight 3 cwt. 1 qr., suitable for four or six horses £5 15 0

Pair of S Light Drag Harrows, covering 7ft., Tines 13 ins. long, weight 2 cwt. 0 qrs. 14 lbs., for three horses £4 15 0

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E. PAGE & Co's

PATENT ADJUSTABLE SOLID TOOTH TRIANGULAR DRAG HARROW.



This Implement has met with a very large sale; being fitted with E. Page & Co.'s Patent Adjustable Teeth, it is easily altered to take any width by simply removing the outside teeth, and thus enables the occupier to suit its draught to the power available; from one to four horses being required according to depth and width. For the cultivation of hops it is invaluable.

The working of this Harrow cannot fail to give the greatest satisfaction, as all the weeds are brought to the surface and a fine tilth ensured.

PRICES:—

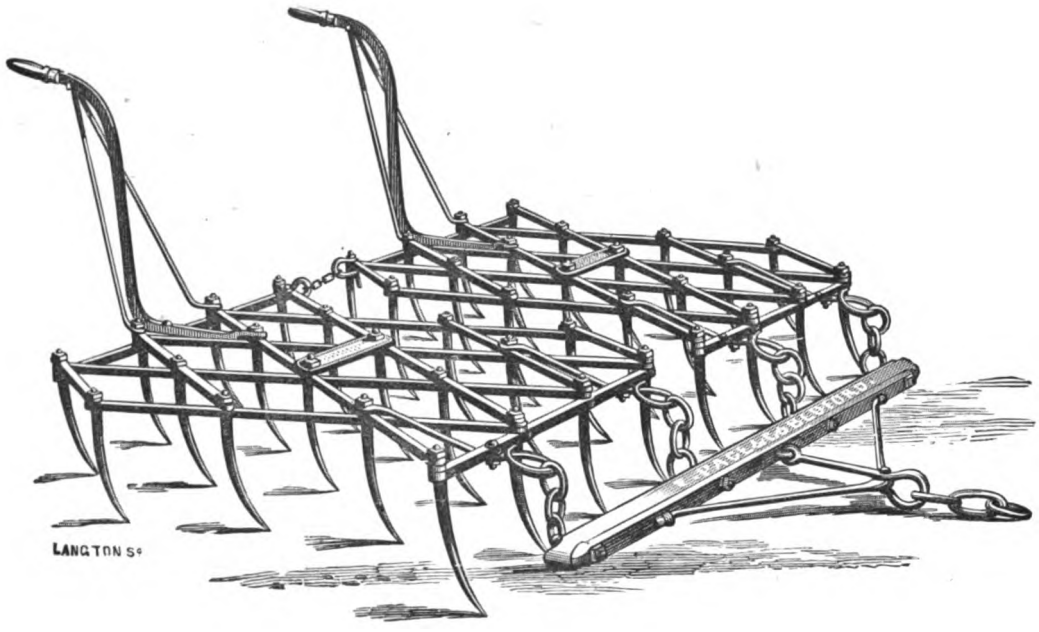
Large Triangular Harrow, marked W, "The Standard," covers 4ft. 5in., frame being ¾in. square iron, and 14 teeth 13-16" square fitted with Malleable Castings and iron draught bar, weight 1 cwt. 2 qrs. 15 lbs	£3	10	0
Small Triangular W Harrow, with 10 teeth, covers 3ft. 3in., weight 1 cwt. 0 qrs. 24lbs.	£2	10	0
Large Triangular Harrow, marked S, covers 4ft. 2in., frame ⅝in. square, 13 teeth 11-16" square, weight 1 cwt. 0 qrs. 7 lbs.	£2	10	0
Small Triangular Harrow, marked S, covers 3ft. 1in., with 9 teeth weight 3 qrs. 5 lbs. ...	£2	0	0
E Triangular Harrow	£5	0	0

The Tines can be had either with Duck Feet or Spud Points at the same price.

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E. PAGE & Co.'s

PATENT HANDLED DRAG HARROWS.



These Harrows work in pairs, and are each fitted with 20 long curved tines so as to draw deeply into the ground.

They can be used with three or four horses, and are often more efficient than Scarifiers—they are fitted with handles so as to relieve the contents as required.

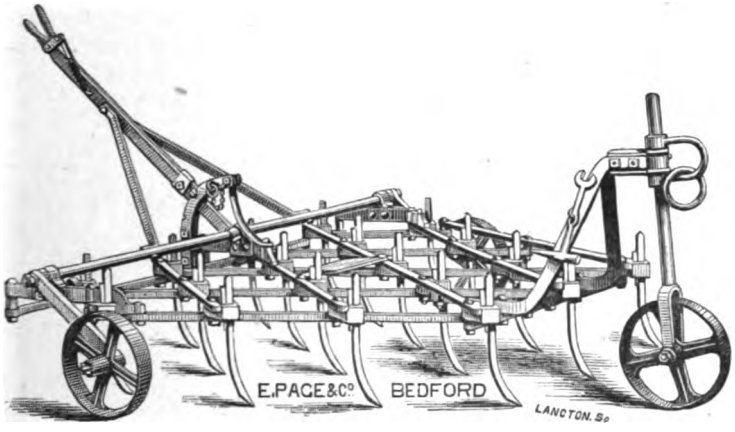
PRICES:—

No. 7,	Drag Harrows, width 7 feet, weight 1¾ cwt....	£3 10 0
No. 8,	Drag Harrows, width 7 feet, weight 2 cwt.	£4 0 0
No. 8½,	Drag Harrows, wi lth 8 feet, weight 2¼ cwt....	£4 10 0

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E. PAGE & Co.'s

NEW PATENT LEVER DRAG HARROW WITH WHEELS AND ADJUSTABLE TINES.



This Harrow is a very serviceable Implement, being mounted on three wheels, the land can be harrowed deeper or shallower by means of the Tine Adjustment or the Lever Adjustment or by both.

No. 1, Lever Drag Harrow, with three wheels and 19 Patent Adjustable Tines ... ... £ 6 5 0

HOWARD'S PATENT SELF-LIFTING WHEEL HARROW.

L 2, for two or three horses, with three wheels and 18 Tines ... ... £ 8 10 0

L 3, for three or four horses, with three wheels and 23 Tines ... ... £ 9 10 0

L 4, for four horses, with three wheels and 25 Tines £11 0 0

The Implement can be cleared without stopping the horses, at any part of the field.

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FOWLER'S PATENT TURNING HARROW.

This Implement is a combination of Cultivator and Harrow and is adapted for doing work which may be described as half-way between that effected by a Cultivator and Harrow.

This Implement is constructed in three pieces, so as to accommodate itself to uneven surfaces, and will take a breadth of from 10 to 15 feet; it is specially designed and adapted to work in land which has been steam-ploughed, dug, or cultivated in the previous autumn, and it will do everything necessary in the spring to ensure the land being in a proper state for any kind of crop. The Steering Frame is so arranged that it will take different Harrows, from the lightest seed Harrow up to regular light cultivating tools. It also can be fitted with Light Ridging Ploughs. It is lifted at the end and turned round, thus getting into new work at once, in a similar way to the action of a Steam Cultivator.

Three Ridging Bodies can be put on the Steering Frame by removing the Harrow Frame.

This exceedingly useful Implement is made of wrought iron, with welded sockets for the tines.

A Light Harrow or any such Implement may be hung behind it if desired.

Two kinds of Shares are made for this Implement, one a broad Share for cutting the whole ground, and the other a square pointed Share for moving the soil only; but the requirements of the farmer will always determine which of these Shares should be used. As a matter of economy it is advisable to keep a complete set of tines and points of each kind always in stock.

PRICES:—

Patent Turning Harrow, 10 feet wide—Iron Tines...	£86	0	0
Patent Turning Harrow, 10 feet wide—Steel Tines...	£88	0	0
Patent Turning Harrow, 15 feet wide—Iron Tines...	£94	0	0
Patent Turning Harrow, 15 feet wide—Steel Tines...	£97	0	0

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FOWLER'S ORDINARY STEAM HARROW.

This Implement will take a breadth of from 12 to 18 feet, and thus from 40 to 60 acres can be easily gone over in a day. This operation is all that is necessary for spring cultivation when land has been thrown up roughly by the "digging breasts" in the previous autumn.

The Harrow is very strongly constructed, can be driven at a high speed, and the tines will be found to penetrate the soil to a great depth. The Harrow under-frames can be removed, and Rollers, Clod Crushers, Norwegian Harrows, or any other Implements, substituted for them.

PRICES:—

Ordinary Steam Harrow, 4 framed	£50	0	0
Ordinary Steam Harrow, 5 framed	£55	0	0
Ordinary Steam Harrow, 6 framed	£60	0	0

HOWARD'S PATENT STEAM HARROWS.

These Harrows are most useful for working land after it has been broken up by the Steam Cultivator. With a stationary set of apparatus, 15 to 20 acres may be harrowed in a day. Harrows of different sizes can be used with the same framework and steerage.

PRICES:—

Steam Harrows A 1, to cover 12 feet, extra strong...	£30	0	0
Steam Harrows No. 1, to cover 11 feet, for general work...	£25	0	0
Steam Harrows No. 2, to cover 11 feet, for light work	£22	10	0

HOWARD'S

PATENT SELF-LIFTING & TURNING STEAM HARROW.

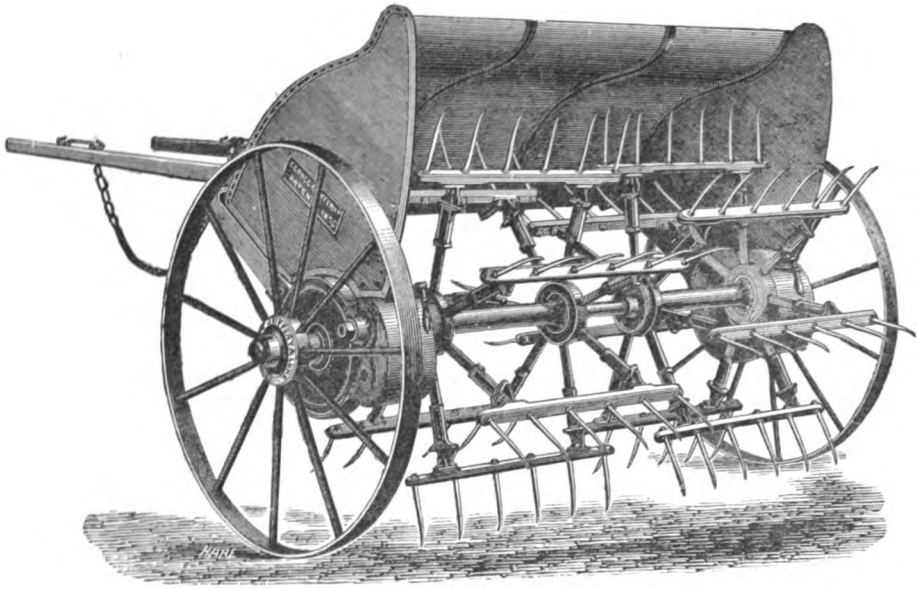
This Implement performs the same operations as the Ordinary Horse Drag Harrow, but is made strong enough for Steam Power and is fitted with tines and points.

Price of Self-Lifting and Turning Harrow	£32	10	0

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JEFFERY & BLACKSTONE'S

ROYAL AGRICULTURAL SOCIETY OF ENGLAND'S TAUNTON FIRST PRIZE HAY-MAKERS.



These Hay-makers are fitted with Hoods as illustrated, which enables them to ted out the heaviest crops in windy weather without clogging or loading, leaving the grass lightly and evenly spread on the ground, and has no tendency to shed out the hay seeds.

Each Fork is fitted with two springs and the Machines are adapted for the heaviest crops as well as light.

The shafts can be folded up, so as to pack the Machine away in small compass.

PRICES:—

The Taunton No. 1, Double Action Hay-maker with hood, 8 feet wide, weight 9½ cwt.	£16 16 0
The Taunton No. 2, Double Action Hay-maker with hood, 7ft. 6in. wide, weight 8 cwt.	£15 15 0

If with seat 15/- extra.

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W. N. NICHOLSON & SON'S

STRONG PATENT DOUBLE-ACTION HAY-MAKING MACHINES

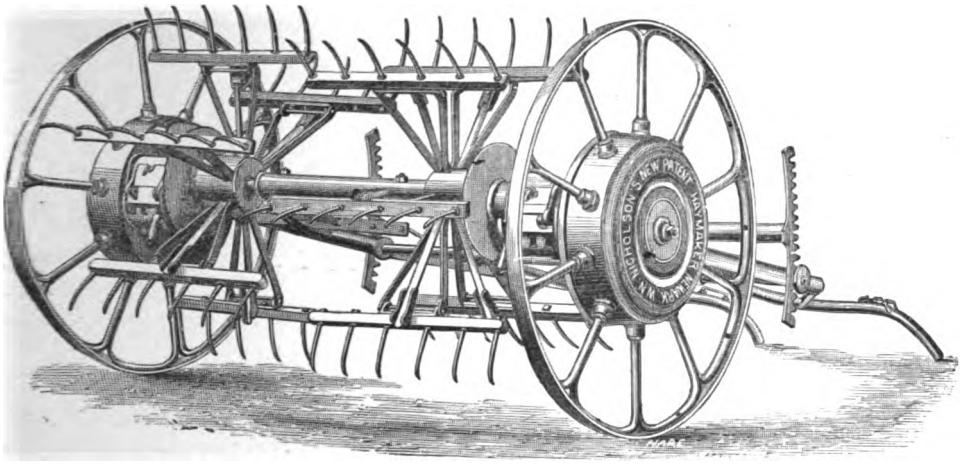
WITH FORWARD AND REVERSE MOTION.

At the great Trials of Hay Machines at Manchester, in 1869, which was the last occasion when all the leading makers competed, W. N. Nicholson & Son were awarded the **First Prize.** Further, out of the **Four** First Prizes offered for Hay Makers by the Royal Society of England ever since 1857, for which all the leading Makers have competed, W. N. Nicholson & Son have won **Two**, and divided a **Third.**

At the Paris Universal Exhibition in 1867, the **First Prize** for Hay-making Machines, and the **First Prize** for Horse Rakes was awarded to W. N. Nicholson, in competition with all English, Continental, and American makers of repute.

At the Lille International Trials in 1863, both **First Prizes** were decreed to W. N. Nicholson's Hay Makers, in competition with all the leading Firms.

At the Paris Universal Exhibition, 1878, the highest special award made to Hay Makers and Rakes, the Silver Medal, fell to W. N. Nicholson and Son.



N.B.—All Nicholson's Machines have the double action, that is, each travelling wheel drives **half the** Machine, while cheap Machines by other Makers are driven from one wheel only, the **disadvantage** of which requires no comment.

STRONG FULL-SIZED HAY-MAKERS.

No. 1. —**Original Prize Machine** with 16 sets of Forks and 96 Tines. 7ft. 6in. wide. 3ft. 10in. wheels. Strong Machine for heavy crops £15 15 0

When required to pass through narrow gateways this Machine can be had 6ft. 9in. wide, without extra charge.

No. 1 A.—Similar to the above, but with higher and stronger wheels, 4ft. 2in. diameter. 12 Sets of Forks, 72 Tines, 7ft. 3in. wide. Most recommended for general use, and for deep and uneven Meadows... ... ... £15 15 0

No. 3. —Powerful high-wheeled Machine, with 16 sets of Forks and 96 Tines. Adapted for large occupations, water meadows, and extra heavy crops £16 16 0

The above Machines are fitted either with Wood Shafts or with Nicholson's Patent Imperishable **Shafts** of Tubular Iron ; or with a pole for a pair of light horses or oxen, as used on the Continent. **They can also** be had with shafts for two horses abreast, at 20s. extra. Wire screens, 15s. extra.

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NICHOLSON'S

PATENT HAY-MAKER WITH DIVIDED FORK-BARS

AND WOOD OR IRON SHAFTS, OR POLE, AS PREFERRED.

These Machines have four narrow Fork Heads in the width, placed in a zigzag position, and six in the circumference. This arrangement provides double the usual number of springs, gives increased power over heavy crops, and prevents the straining or twisting of the Fork-bars.

No. 5 B Hay Maker, with divided Fork-bars, strong full-sized Machine as No. 1 B but with double the usual number of Springs £16 10 0

No. 6 Machine, with divided Fork-bars, same size and strength as No. 3, but with double the usual number of Springs £17 10 0

Wire Screen 15s. extra.

In the new series, the gearing in the forward motion, which has the heaviest strain on it in work, is not cast in a piece with the road wheel, but is separate and bolted on, and is therefore easily and cheaply renewed. By the new arrangement the draught is also very much reduced, and there is no weight on the horse's back. "The weight of the shafts is so nicely adjusted that only 26lbs. is carried by the horse."—*Judges' Report, Manchester Trials, R.A.S.E. Journal, Vol. V., p.* 549.

No. 12 C, medium strength Machine, with divided Fork-bars, Road Wheels 4 feet diameter, and eccentric shaft adjustment (recommended) £14 0 0

Wire Screen 12s. 6d. extra.

HOWARD'S PATENT HAY-MAKERS.

In these Machines the Fork-barrels are so arranged as to render clogging well nigh impossible; the forks are mounted in sets of three, and placed in a zigzag position—an arrangement which equalizes the work, and thoroughly separates and distributes the crop. The gear work is both strong and simple, and the motion can be changed in an instant to the backward or forward action by a simple eccentric movement of the main axle. For adapting the machine to the nature of the crop, a similar eccentric movement is also used for raising or lowering the Fork-barrels. When once set for the forward action no further change is required to use the machine with the backward action, except the reversal described.

For Continental use, a pole, instead of shafts, can be fitted to any of J. & F. Howard's Hay-Makers without extra charge.

HH, a Full Sized Double-Action Machine, extreme width 8ft., average weight 10 cwt. £15 15 0

Wire Screen, to prevent the grass lodging on the front, 12s. 6d. extra.

Drivers Seat, 10/- extra. Double Shafts, 20/- extra.

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NICHOLSON'S NEW PATENT

INTERLOCKING UNIVERSAL HAY-MAKER.

No. 1.—Size 6ft. 8in. wide £12 12 0
Wire Screen, 12/6 extra.

No. 2.—Size 7ft. 8in. wide £15 15 0
Wire Screen, 15/- extra.

The Patent Interlocking Hay-Makers, though only introduced in their present form in 1877, have already become general favourites. While cheap and light they are powerful machines, and have been found adequate to all ordinary crops. They are specially recommended for hilly countries, and where light horses are employed.

Their mechanism is most simple—by one and the same movement of sliding the pinion into gear, say for the forward motion, the pinion which gives the backward motion is thrown out of gear, or *vice versâ*. It is impossible, therefore, for the most ignorant labourer to lock and break the gearing. The arrangement allows the weight and width of the naves of the road wheels to be reduced one-half, and the speed of both backward and forward motions to be considerably accelerated without adding to the draught.

The No. 2 pattern will take two swathes of the mowing machine, an advantage hitherto unattainable without undue weight or complicated mechanism. The Fork-heads are fitted with double springs, which prevent them, though much longer than usual, from being twisted or strained.

The dropping of the axle in the centre from the extra width of the Machine, is provided against by a strong webbed stay, acting as a truss.

NICHOLSON'S HAY-MACHINES

ADAPTED FOR CUTTING AND EXTIRPATING THISTLES.

The rapid reverse motion of Nicholson's Machines makes them peculiarly efficacious for this purpose, as they give the bruising cut which is found most destructive.

Price of a Set of 8 Steel Thistle Cutting Blades, fitted to Machines with Straight Fork-bars £1 12 0

Price of a Set of 12 ditto, fitted to Machines with Divided Fork-bars £2 2 0

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NICHOLSON'S LIGHTER HAY-MACHINES,

With Double Action, and with Forward and Reverse Motions.

These Machines are excellent for crops of moderate weight, and are stronger, lighter in draught, and better than those by other makers at a higher price. They possess all the characteristic advantages which have rendered Nicholson's Hay-Machines so well known and appreciated, viz., the fewness of wearing parts, the absence of all complication, the undoubted lightness in draught, and a general ease to the horse in working, which cannot be obtained by any other system. In these important points they are unrivalled, however much to the contrary may be professed by other makers. As there are fewer bearings and working parts (a fact that no one will dispute) this must necessarily be the case.

The arrangement for putting these Machines in and out of work, and of altering their height from the ground, is most simple and expeditious. The shafts can be folded back for convenience of stowage.

No. 12.—Original Light Machine, 6ft. 8in. wide, wheels 3ft. 8in. diameter, for Crops of moderate weight... ... ... £12 0 0

No. 12B (the No. 12A remodelled) similar to the above, but with higher and stronger wheels, 4ft. diameter, axle covers of large size fitted with wrought iron flanges, strongly recommended for medium work, for hilly country, and for general Continental use £13 0 0

No. 13.—Manchester Patent Three-Motion Machine, with the usual forward motion, and both slow and fast backward motions... .. .. £14 14 0

This Hay-Maker is a fac-simile in size and strength of the No. 12B. Machine, described above. It is 7ft. wide, and has 4ft. travelling wheels, and possessing the addition of the gentle slow backward motion, it is strongly recommended for spreading artificial grasses.

The No. 13 Machine can be had, if desired, with the double back-action only, at the same price.

NICHOLSON'S HAY-MACHINES

With One Motion.

Of this class these are the best and cheapest Hay-Machines made, though being lighter in weight than those previously described, they are not so suitable for heavy crops. They have the double action (*i.e.*, each wheel works half the machine), but have either the forward or the reverse motion only. In some districts where the reverse or backward motion alone is found sufficient, the No. 9 Machine is confidently recommended as a most effective and cheap spreader, both for natural and artificial grasses.

No. 8.—Hay-Maker, with forward motion only, 6ft. 6in. wide, wheels 3ft. 8in. high, 12 Sets of Forks £11 0 0

No. 9.—Hay-Maker, an exactly similar Machine, but with reverse motion only £11 0 0

All the above Machines are fitted with Shafts either of wood or of tubular iron, or, for Continental use, with pole for two horses or oxen. Wire Screens, 12s. 6d. each.

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HORNSBY'S

PATENT HEDGE CUTTING AND TRIMMING MACHINE.

This Machine is similar in appearance to an ordinary Field Mowing Machine—being mounted on two road wheels of large diameter, which are both employed in driving the Knives by means of suitable Gearing.

The Knives or Sickle Bars are carried by an overhead sliding bar projecting from the side of the Machine, and are similar to Mower and Reaper Knives, but larger and stronger.

The overhead sliding bar, with the Cutting Apparatus, is so arranged as to be capable of ready adjustment by the man in charge who rides upon the Machine.

The Cutting Apparatus can be raised to any required height or to any angle so as to cut the hedge to any size or shape—and both sides of the hedge can be cut from one side.

The Machine is worked by two horses and requires only a youth to drive and a man to control the cutting.

About five miles of hedge can be cut per day on both sides and at the top.

Where trees, railways, or other obstructions occur, the Cutting Apparatus can be instantly withdrawn and put into work again as required.

Hedges of two or three years growth may be cut without fear of breakage, but where they are regularly cut, they will be gone over once or twice a year.

Price, complete, with all necessary Tools... ... ... £50 0 0

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HINTS TO USERS OF DRIVING BELTS AND MACHINERY.

The cost of Belts is so large, and the wear and tear so great, that the following Hints are given with the hope that they may prove useful to Employers :—

Long Horizontal Belts give a much better effect than Short Vertical Belts.

Long Belts working horizontally increase the grip by their own weight. Short Belts require to be tighter than long ones.

If the length of the Belt is too great, a heavy sag will be produced, causing increased friction at the bearings, and the belt will have a flapping, unsteady motion, very prejudicial to both Belt and Machinery.

If Belts are required to run with the grain side next to the pulley, the fact should be stated when ordering, so that the rivets may be arranged accordingly.

If the pulleys are covered with leather, the friction of the Belt will be very materially increased and also its durability.

Leather Belts should be well protected from moisture, and waterproofed if working in very wet places.

Belts should be sponged with warm water and soap every three or four months, and then well rubbed with castor oil which prevents rats attacking them.

Take care that the joints of a Belt run the same way as the pulley and not against them.

In punching a Belt for lacing use an oval punch, with the larger diameter parallel to the length of the Belt.

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HINTS TO USERS OF DRIVING BELTS AND MACHINERY

(CONTINUED).

In lacing Belts, keep the ends exactly in line and lace both sides with equal tightness. Use thin strong laces and do not cross them on the side of the Belt next to the pulley.

Arrange the Belts to run off from each other in opposite directions, so as to balance and thus reduce friction. Let the direction of motion of the Belt be from top to top of pulleys.

See that the driving and driven pulleys are exactly in line and parrallel—so as to avoid unequal strain.

Keep the Belts dry and do not leave them on the pulleys in the open air all night; but coil them up tightly and secure with a strap.

If one side of a Belt stretch more than the other—reverse it and run it inside out for a time.

Wide pulleys without flanges are to be preferred to narrow flanged pulleys—as Belts may be very much damaged by being suddenly thrown on to a flange.

Examine all Machinery at the end of the season and see that all necessary repairs are done at once. Keep it well oiled, while in use.

To find the width of a single Belt for any given horse power—

$$\text{Width in inches} = \frac{\text{H.P.} \times 33{,}000.}{\text{L.} \times \text{S.}}$$

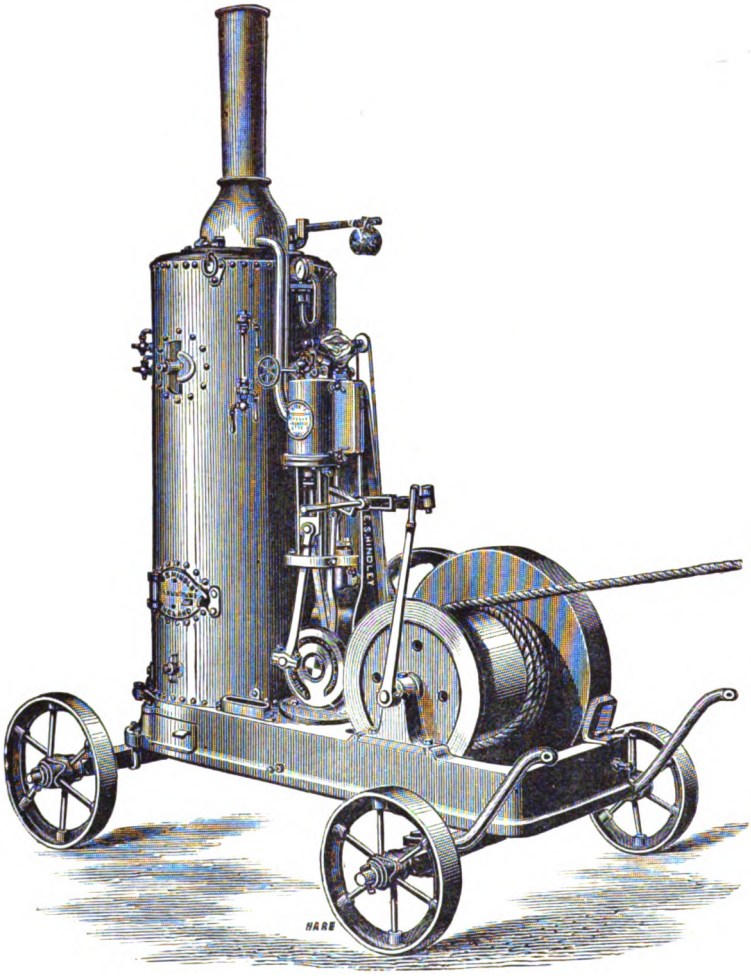
H.P.—Horse Power. L.—Length of Belt in inches, in contact with smaller pulley.

S.—Speed of Belt in feet per minute.

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HOISTING AND WINDING ENGINE

SPECIALLY ADAPTED FOR USE IN GRAIN STORES, MALT HOUSES, BREWERIES, WHARVES, QUARRIES, AND BUILDERS' AND CONTRACTORS' PURPOSES.



These Hoisting Engines are very simple and are easily managed by one handle, either for raising or lowering the load or suspending it at any desired height.

The handle may be worked from the top of a building if required. The chain or rope can be carried any distance round corners by means of guide blocks.

When hoisting or lowering it is not necessary to stop the Engine — this is kept continuously running and can be utilized for driving other Machinery.

HORSE POWER.	2	3	4	5	6	8	10
	£	£	£	£	£	£	£
Hoisting Gear only	20	24	35	35	40	40	40
Engine and Hoisting Gear without Boiler...	40	50	63	73	80	90	105
Engine and Boiler and Hoisting Gear complete	78	94	120	130	145	170	195
Engine and Boiler and Gear complete on travelling wheels ...	84	100	130	142	160	185	205
Load Lifted direct from Barrel ... ...cwt.	6	9	13	16	20	20	20

The above Engines will lift the loads named, direct from the Barrel at about 120ft. per minute.
By using pulley blocks much heavier loads can be lifted at proportionately slower speed.

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E. PAGE & Co's

IMPROVED HORSE GEAR WORKS.

No. 1.—Pony or Mule Gear, well adapted for driving Churns, Small Chaff Cutters, Elevators, &c.

Gear only ... ... £ 7 0 0

No. 2.—Strong One-Horse Gear—suitable for two light horses, with Separate Intermediate Motion—fitted with

two arm lever box and one pole £12 0 0

No. 3.—Two-Horse Gear, with Separate Intermediate Motion, complete for two horses £14 0 0

No. 4.—Strong One-Horse Gear — suitable for two light horses, with Increasing Motion, on the same

Frame £11 5 0

No. 5.—Two Horse Gear, with Increasing Motion, on the same Frame... ... ... £13 5 0

Extra for Three Travelling Wheels and Shafts (as illustrated) ... ... £ 3 0 0

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HUNT & TAWELL'S

HORSE, PONY, AND MULE GEARS.

These Gears are fitted with improved Dome-Top Driving Wheels—and are well adapted for driving Churns, Pumps, Chaff-cutters, Stacking Machines, and Food Preparing Machinery.

PRICES:—

No. H 29.—1	makes 18 revolutions to one of Pony	...	...	...	...	...	...	£7	0	0
No. H 29.—2	,, 18 and 13 ,,	,,	...	...	...	...	...	...	£7	5	0
No. H 29.—3	,, 22½ ,,	,,	...	...	...	...	...	...	£7	0	0
No. H 29.—4	,, 13 ,,	,,	...	...	...	...	...	...	£7	0	0
No. H 29.—5	,, 8 (single speed)	,,	...	...	...	...	...	...	£6	10	0
No. H 29.—6	,, 26 or 30 ,,	,,	...	...	...	Gear only			£6	0	0
	Intermediate Motion for Ditto...	...	...	...	...	...	...	...	£2	7	6

LIGHT ONE-HORSE GEARS.

No. X 9, with Separate Intermediate Motion.—Pinion Spindles of Gear makes 6⅓ revolutions to one of Horse.

Pinion Spindle of Motion makes 35, 30, or 26 revolutions to one of Horse.

Price of X 9 Gear only...	...	...	...	...	...	...	...	...	...	£7	17	6		
Price of Intermediate Motion	...	...	...	...	...	...	...	...	£2	7	6			
Complete	...	...	...	...	...	...	..	...	...	...	———		£10	5	0

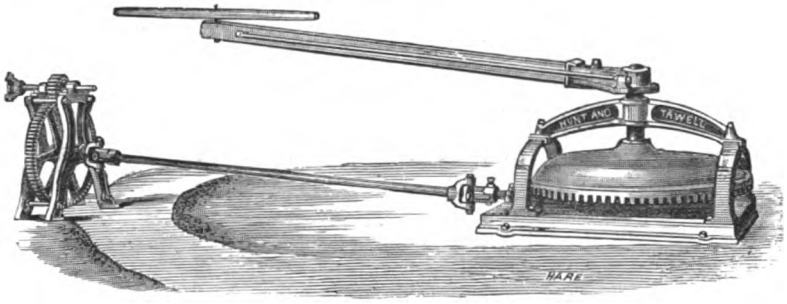
No. X 10, with Increasing Motion on Same Frame—Speed 26, 30, or 35 revolutions to one of Horse.

Price, complete for one Horse	...	...	...	...	...	...	...	...	...	...	£10	0	0

When ordering, state speed required.

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HUNT & TAWELL'S HORSE GEARS.



One-Horse Gear with 36 inch Driving Wheel.

No. 20, with Separate Intermediate Motion.—Speed of Pinion Spindle of Gear 6½ revolutions to one of the Horse.

Speed of Pinion Spindle of Motion 30½, 24½, or 36 to one of the Horse.

No. 20—Horse Gear, fitted for one Horse...	£8	15	0
Intermediate Motion for Ditto	£2	15	0
Complete for one Horse ... ... ———	£11	10	0
If fitted for two Horses... ... ...extra	£ 1	5	0
If fitted with Double Cap and One Pole ... ...extra	£ 0	5	0

One-Horse Gear with 36 inch Driving Wheel and Increasing Motion on the Same Frame.

No. H 37.— 1 makes 21 revolutions to one of the Horse.
No. H 37.—2 ,, 25 revolutions to one of the Horse.
No. H 37.—3 ,, 30½ revolutions to one of the Horse.
No. H 37.—4 ,, 36 revolutions to one of the Horse.
No. H 37.—5 ,, 18 revolutions to one of the Horse.

No. H 37—Horse Gear complete for one Horse...	£11	0	0
If fitted for two Horses ... ...extra	£ 1	5	0
If fitted with Double Cap and One Pole... ... ...extra	£ 0	5	0
If fitted with Universal Spring Clutch ... ...extra	£ 0	10	0

When ordering, state speed required.

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HUNT & TAWELL'S HORSE GEARS.

Two-Horse Gears with 42 inch Driving Wheels.

No. H W 53, with Separate Intermediate Motion.—Speed of Pinion Spindle Gear 7 revolutions to one of the Horse.

Speed of Pinion Spindle of Motion 33½, 24, or 38½ to one of the Horse.

Price of H W 53, fitted for one Horse	£10	0	0
Price of Intermediate Motion	£ 3	5	0
Complete			£13 5 0
If fitted complete for Two Horses			£14 10 0
If fitted with Double Cap and One Pole ... ... extra			£ 0 5 0
Intermediate Motion, fitted with Striking-out Gear ... ... extra			£ 0 10 0

Two-Horse Gear H W 52, with Increasing Motion on the Same Frame.

This Gear is especially adapted for driving Coffee Pulping Machinery, and when required for this purpose it is sent without Poles, but with extra long Spindles and Bolts for fixing.

Speed 19, 26, 32, or 38 revolutions to one of the Horse.

Price, complete, for one Horse with Poles	£12	10	0
Price, complete, for two Horses with Poles...	£13	15	0
Without Poles, arranged for Coffee Pulping	£12	10	0
If fitted with Universal Spring Clutch ... ...extra	£	0 10	0

When ordering, state speed required.

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HUNT & TAWELL'S HORSE GEARS.

Extra Strong Two-Horse Gears.

The No. H W 47 Gear has an Open-armed Driving Wheel 54 inches diameter—with Wrought Iron Spindle and Oak Frame.

The Intermediate Motion is fitted with Striking-out Gear.

The Pinion Spindle of the Gear makes $8\frac{1}{3}$ revolutions to one of the Horse, and the Motion Spindle makes $40\frac{1}{3}$.

Price of No. H W 47 Gear, with Double Cap, Two Poles, &c. £13 5 0

Price of Intermediate Motion, with Striking-out Apparatus... £ 3 15 0

Complete for two Horses ... ... ——— £17 0 0

If fitted for three Horses £18 10 0

The No. H W 48 Gear, with Increasing Motion on the same Frame.

Driving Wheel 54 inches diameter.

Speed $31\frac{1}{3}$, 34, $37\frac{1}{4}$, $41\frac{1}{2}$, $47\frac{1}{4}$, $54\frac{1}{2}$ revolutions to one of the Horse.

Price, complete, for two Horses £16 0 0

Price, complete, for three Horses... ... ... £17 10 0

If Mounted on 3 feet Cast Iron Wheels and Poles arranged as Shafts ...extra £ 4 10 0

When ordering, state speed required.

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WOODS & COCKSEDGE'S

HORSE GEARS.

Extra Strong Two, Three, Four, and Six-Horse Gears, with Separate Intermediate Motions.

No. 4.—Extra Strong Two-Horse Gear. Driving Wheel 5 feet 6 inches diameter.

The Cogs are fitted on in Segments so that they can easily be replaced in case of breakage.

The Frame is made of Oak.

No. 4—For Two Horses, price with improved Pole Brace Iron	£17 15 0	
Intermediate Motion and Striking-out Gear	£ 5 4 0	
Complete		£22 19 0
No. 4—For Three Horses, price complete with Brace Irons and Driver's Seat		£25 15 0
No. 4—For Four Horses, ditto ditto ditto		£27 0 0
No. 2—Double Motion Horse Gear, with Driving Wheel 6ft. 4in. diameter, for Four Horses—fitted with Segments		£34 0 0
No. 2—Double Motion Horse Gear, with Driving Wheel 6ft. 4in. diameter, for Six Horses—fitted with Segments, easily replaced in case of breakage		£38 0 0

By means of the Double Motion Gear and a large Pulley attached to the end of the Driving-rod, almost any required speed may be obtained. This arrangement is well adapted for driving Saw Benches, Centrifugal Pumps, Cotton Gins, &c.

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HORSE GEARS.

Prices of Pulleys and Frames for attaching to Horse Gears when driving Saw Benches, Cotton Gins, &c.

PRICES OF FRAME AND PULLEY ONLY.

Cast Iron or Oak Frame—fitted with 2 feet Pulley	£3 5 0
Cast Iron or Oak Frame—fitted with 3 feet Pulley	£4 0 0
Cast Iron or Oak Frame—fitted with 3 feet 6 inch Pulley	£4 10 0
Cast Iron or Oak Frame—fitted with 4 feet Pulley	£5 0 0
If fitted with extra large Spindle and Brasses 1¾″ diameter ... ...extra	£0 10 0

PULLEYS FOR HORSE GEARS, &c.

Diameter..	9″	10″	12″	14″	15″	18″	21″	24″	27″	30″	33″	36″	42″	48″
Width ...	4″	4″	4″	4″	4″	5″	5″	5″	5″	6″	7″	7″	7″	7″
Black ...	5/0	5/6	6/0	7/0	7/6	10/0	14/0	19/0	25/0	30/0	34/0	38/0	45/0	52/0
Turned ...	9/0	9/6	10/0	12/0	12/6	16/0	21/0	27/0	34/0	40/0	45/0	50/0	59/0	68/0

PORTABLE HORSE GEARS.

Any of the Horse Gears can be mounted on Wheels, so as to be moveable from place to place with ease.

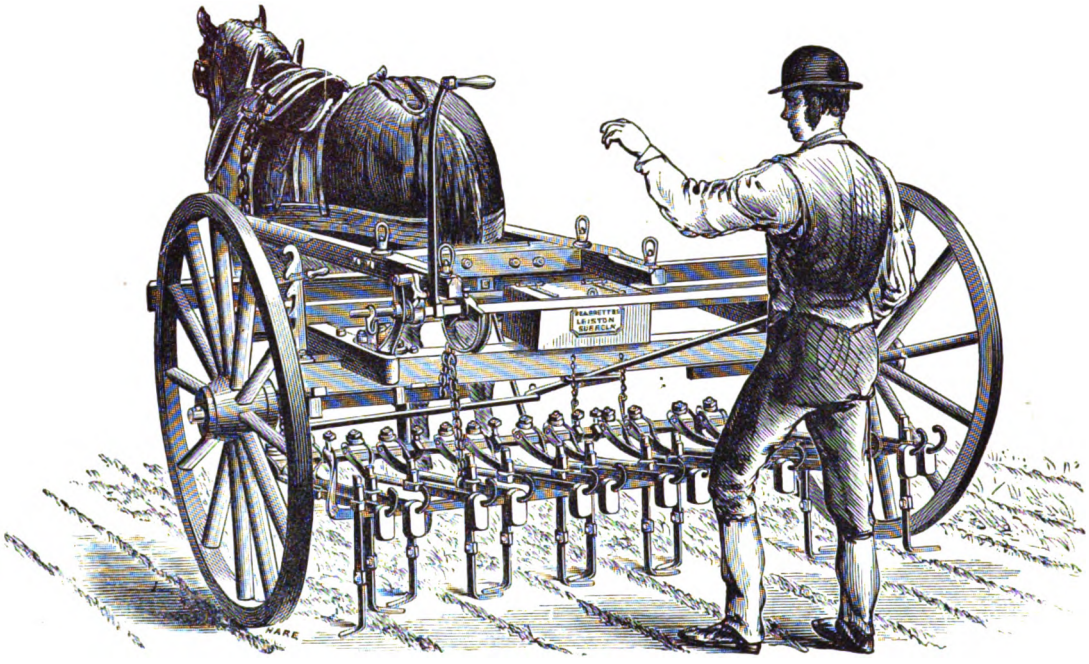
Extras for Small Gears.

Mounted on Four Wheels, with fixed axles ... ...extra	£2 0 0
Mounted on Three Wheels, with front wheel to lock ... ...extra	£2 10 0

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GARRETT'S

IMPROVED LEVER HORSE HOES.



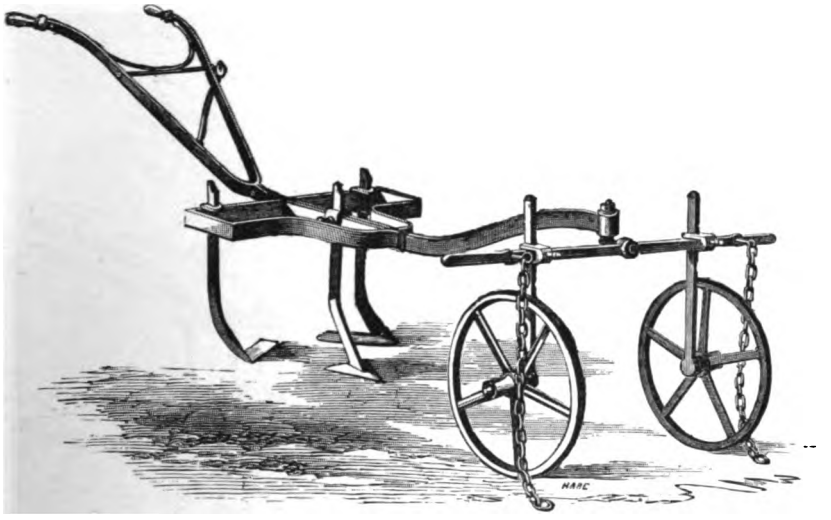
In these Hoes the depth of every Blade can be separately regulated by means of Stalks secured by Wedges and Set Screws, and the pitch of the Blades and the level of the lever bar can be adjusted to the greatest nicety by means of a simple lever arrangement, on either side of the frame.

No. of Hoe.	No. of Levers.	Width. ft.	in.	Price. £	s.	d.	Including complete Set of Blades, consisting of
1	10	4	6	13	10	0	10 4 inch L & A Blades and 8 7 inch Blades.
3	10	5	0	14	0	0	10 ,, ,, 8 ,, ,,
5	12	5	6	15	10	0	12 ,, ,, 10 ,, ,,
7	12	6	0	16	0	0	12 ,, ,, 10 ,, ,,
9	14	6	6	17	10	0	14 ,, ,, 12 ,, ,,
11	14	7	0	18	0	0	14 ,, ,, 12 ,, ,,
13	16	7	6	19	10	0	16 ,, ,, 14 ,, ,,
15	16	8	0	20	0	0	16 ,, ,, 14 ,, ,,

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E. PAGE & Co.'s

UNIVERSAL STEERAGE HORSE HOE.



This Implement is a General Purpose Horse Hoe for ridge or flat, and works equally well on hill sides when fitted with the Universal Steerage as illustrated.

It is easily converted into a Four Row Wheat or Barley Hoe, taking the rows at eight inches apart.

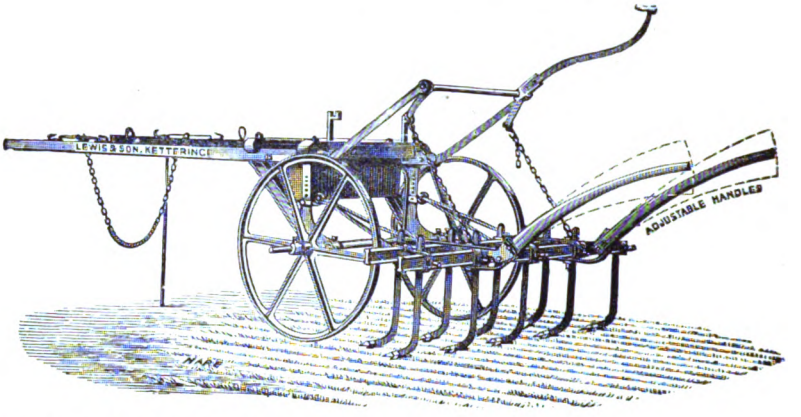
On very hard ground two grubbers are recommended to be placed on the front bars of frame to break the soil and assist the working of the hoes.

PRICES:—

H H 2 Horse Hoe, with two wheels, Universal Steerage and Three Steel Bean or Turnip Hoes	£2	17	6
Set of Four Wheat Hoes and Stems ... ...extra	£0	12	0
Grubbers with Clips ... ... each	£0	3	6
H H 1 Horse Hoe, with One Wheel and Three Steel Bean or Turnip Hoes ...	£2	12	6
H 2 Horse Hoe, with Two Wheels, Universal Steerage and Three Steel Bean or Turnip Hoes	£2	10	0
H 1 Horse Hoe, with One Wheel and Three Steel Bean or Turnip Hoes ...	£2	2	0
H 0 Horse Hoe, ditto ditto ditto ...	£1	17	6

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LEWIS'S
STEERAGE HORSE HOE,
WITH LIFTING LEVER.



This Implement is adapted to follow Drills of any size and will hoe every description of Corn or Roots at any distance apart, either on the ridge or flat. It can be guided to the greatest nicety by means of the parallel steerage, and the travelling wheels can be readily adjusted to any width to avoid injury to the crops.

The Hoe is fitted with Lifting Lever for turning at the land's end and for travelling—and it is also provided with Adjustable Handles as shown by the dotted lines. The bars which carry the Hoes have ∧ shaped edges which the tines are notched to fit.

PRICES:—

No. 9 Horse Hoe, with Double Bars 6 feet long, wheels 3 feet high, with 9 Triangular Corn Hoes and Clips, and fitted with Improved Lever Adjustable Handles and Box for Tools	£10 10 0
If fitted with 9 Hoes for wide work the price is the same.	
No. 8 Horse Hoe, with Double Bars, wheels 3 feet high, with 9 Triangular Hoes and Clips, fitted with Lever and Box for Tools...	£ 9 0 0
If fitted with 9 Hoes for wide work the price is the same.	
Set of Six Turnip Hoes ... ...extra	£ 0 18 0
Set of Three Triangular Hoes ... ...extra	£ 0 10 6

	s.	d.
∧ Hoes, 5 inches wide ... ...each	3	0
,, ,, 8 inches wide ... ...each	3	6
,, ,, 10 inches wide ... ...each	4	0
Steel Blades for Corn Hoes ... ...per dozen	6/-	

	s.	d.
Turnip Hoes ... ...each	3	0
Ridging Hoes ... ... per pair	6	0
Steel Blades for Wide Hoes ... per doz.	9	0

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LEWIS'S HORSE HOES

(CONTINUED).

No. 7 Horse Hoe, with Double Bars 6 feet long, wheels 3 feet high, with 9 Triangular Hoes and Clips for Corn, with Lifting and Adjustable Handles, Box, &c. ... £7 15 0

If fitted with 9 Hoes for wide work, the price is the same.

No. 7 Horse Hoe, as before described, but with wheels 2ft. 8in. high, &c., &c. £7 10 0

Set of 6 Turnip Hoes and 3 Wide Hoes ... ...extra £1 7 0

No. 6 Horse Hoe, with Double Bars 6 feet long, wheels 2ft. 8in. high, fitted with 7 Triangular Hoes for Corn, with 7 Clips for ditto, Lifting and Adjustable Handles, Box, &c. £7 0 0

Set of 6 Turnip Hoes and 3 Wide Hoes ... ...extra £1 7 0

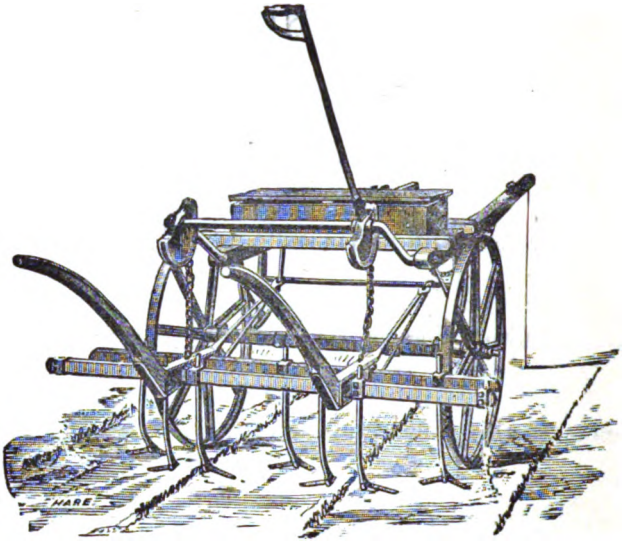
No. 5 Horse Hoe, with Double Bars 5ft. 6in. long, fitted with 7 Triangular Hoes for Corn and 7 Clips for ditto, Lifting Handles, Box, &c. £6 10 0

Lifting Lever to No. 7, 6, or 5... ... ...extra £0 15 0

No. 4 Horse Hoe, with Single Bar 5 feet long, fitted with 6 Triangular Hoes for Corn and 6 Clips for ditto, without Box £5 10 0

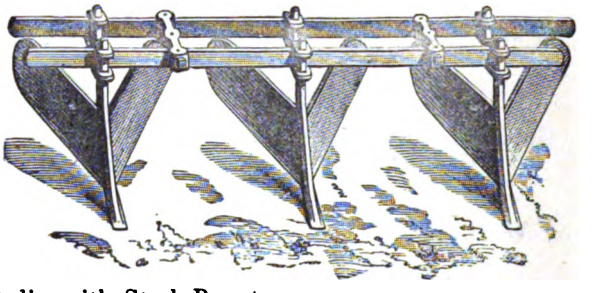
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VIVAN & HEADLY'S
COMBINED GENERAL PURPOSE HORSE HOE, RIDGING PLOUGH, AND POTATO RAISER.



Price of Hoe for either Six Rows of Corn or Three Rows of Roots £9 10 0

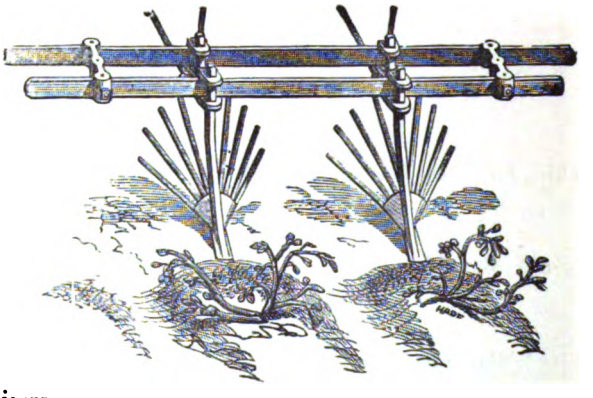
RIDGING



BODIES.

Price of Ridging Bodies with Steel Breasts ... ... each £ 1 10 0
Price of Hoe complete with Ridging Bodies £14 0 0

POTATO



RAISERS.

Price of Potato Raisers ... ... each £1 0 0

The above forms a useful combination for Making and Splitting Ridges, Hoeing and Earthing up Potatoes, Peas, Beans, &c.

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E. PAGE & Co.'s

COMBINED EXPANDING HORSE HOE, FIVE TINED GRUBBER, AND MOULDING PLOUGH.

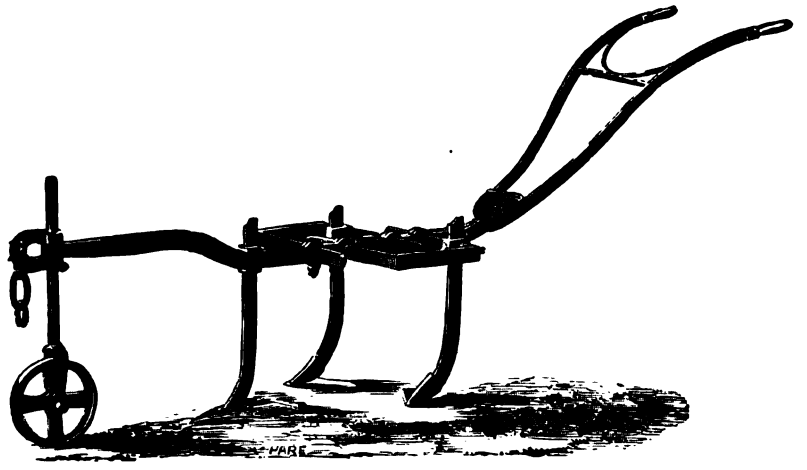
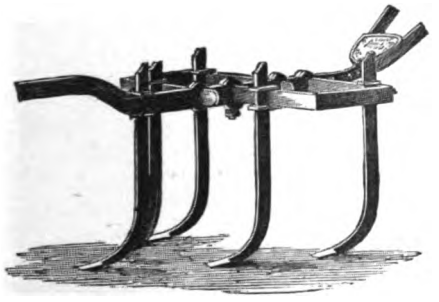
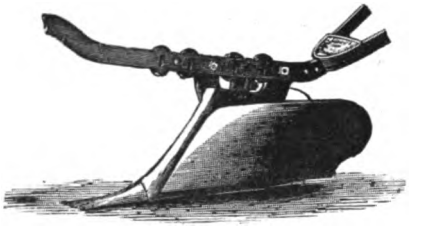


Illustration representing the One Row Horse Hoe, fitted with Three Hoes.



Representing the 5-tined Scuffler or Stirrer, fitted in same frame in lieu of Hoes.



Showing the Moulding Plough, the frame being detached from Beam.

The Implement illustrated above is a General Purpose Horse Hoe for ridge or flat, adapted for hoeing Beans, Turnips, Mangold Wurtzel, &c.

It is also easily converted into a 5-tined Stirrer or Grubber, taking a width of three feet—or it can be used as a Moulding Plough, by attaching the Body to the Hoe Beam, as shewn above.

Price as a Hoe and 5-tined Stirrer	£3	15	0
Price Complete as Hoe, 5-tined Stirrer, and Moulding Plough	£4	15	0
Potato Raiser .. .. extra	£0	15	0

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CORBETT & PEELE'S
SINGLE ROW THREE TINED HORSE HOE.

This Implement is made with Beam and Handles all in one piece. The Hoes can be readily adjusted to any required width or depth. The Front Body is fitted with Point and Share which enables it to penetrate soil of almost any degree of consolidation and gives the Implement great steadiness in work. Small Tine and Chain Harrows can be attached and worked simultaneously if required.

Three Tined Horse Hoe with Tine and Chain Harrow	£2 15 0
Ditto Ditto without Tine and Chain Harrow	£2 8 6

CORBETT'S
FIVE TINED HORSE HOE AND GRUBBER FOR GENERAL PURPOSES.

Five Tined Horse Hoe and Grubber with Tine and Chain Harrow	£3 10 0
Ditto Ditto without Tine and Chain Harrow	£3 3 6
Ridging Body... ... ...extra	£1 0 0

CORBETT & PEELE'S
ADJUSTABLE HORSE OR TURNIP HOE.

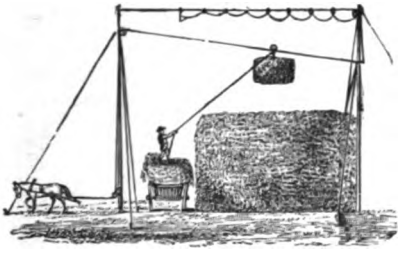
Adjustable Turnip Hoe, for ridge or flat	£3 17 6

CARSON & TOONE'S HORSE HOES.

No. A Horse Hoe with Three Steel Hoes	£3 10 0
No. B Horse Hoe with Three Steel Hoes and Two Tines—which steady the Implement in its work and are very necessary in stiff land	£3 15 0
No. C Horse Hoe with Three Steel Hoes and Five Tines	£4 0 0
No. D Horse Hoe with Five Steel Hoes and Five Tines	£4 15 0
Steerage for hill side ... ...extra	£1 0 0

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COLEMAN AND MORTON'S
IMPROVED WALKER'S
PATENT HORSE PITCHFORK OR ELEVATOR.



"Highly Commended" at the Manchester Meeting of the Royal Agricultural Society of England.

This valuable Implement acquired a very considerable reputation in the United States before its introduction into this country by Coleman & Morton, who have purchased the exclusive right of manufacture. It is now largely used by some of the most practical Farmers in the kingdom.

Its value in saving labour and expediting the stacking of hay can scarcely be overrated, in addition to which it has been extensively used for stacking barley and straw.

A great improvement has been made in the Hook of the Sliding Pulley, which is now so constructed that it will be impossible for the Fork to disengage itself under any circumstances whatever.

The following are some of its advantages :—

It is made almost entirely of steel, weighs only eight pounds, is very durable, and will take up as much hay at a single forkful as a horse can raise.

It is very simple in its construction, is not liable to get out of order, and can be managed by a boy.

It can be worked in strong winds, when other elevators cannot be used.

It will raise the hay to any required elevation, and deposit it on any part of the stack.

Its price places it within the reach of all.

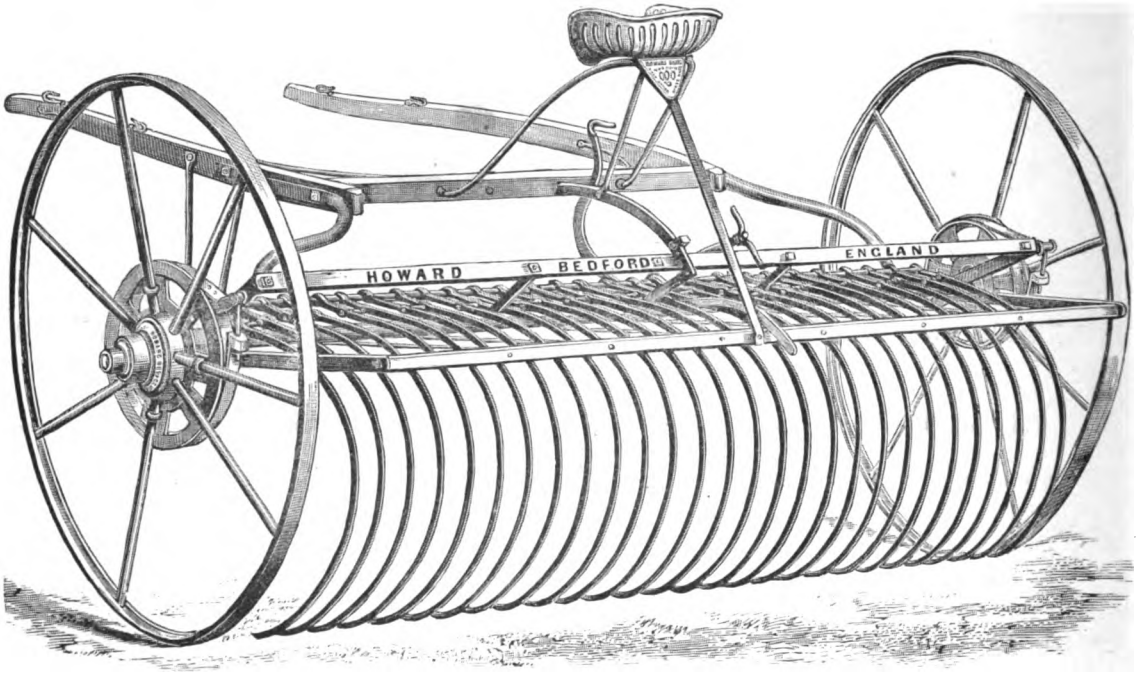
Price of Pitchfork, with Set of Three Pulleys, No. 1... ... ... £2 12 0

Price if with Ring and extra Pulley ... ... No. 2... ... ... £3 0 0

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HOWARD'S

PATENT SELF-ACTING HORSE RAKES.



These Self-acting Rakes have a very simple and efficient Patent Brake Arrangement by means of which the load is instantaneously delivered—the rider having merely to touch a lever with his foot If walking, the attendant has simply to take hold of a lever behind the rake – no exertion is required in either case, as all the work is done by the horse.

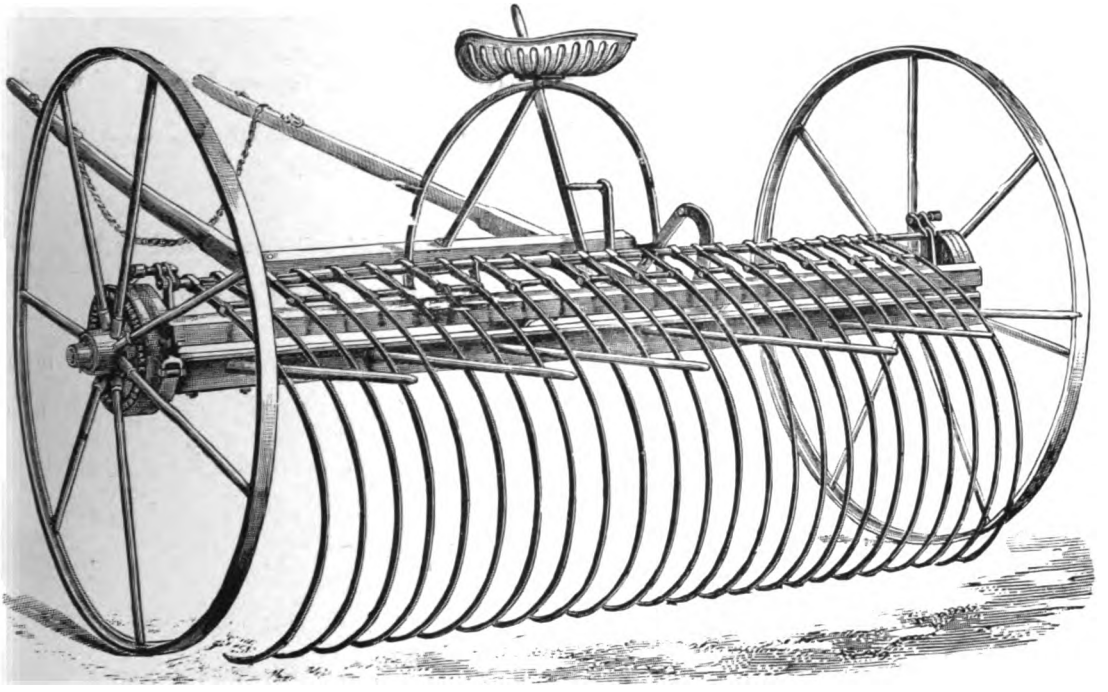
PRICES:—

XX	with 24 Steel Teeth, 36in.	Wrought Wheels,	width 7½ feet,	weight 5¼ cwt.	£10	10 0
XX	with 28 Steel Teeth, 36in.	,,	width 8⅓ feet,	weight 5½ cwt.	£11	0 0
XXX	with 24 Steel Teeth, 42in.	,,	width 7½ feet,	weight 5½ cwt.	£11	10 0
XXX	with 28 Steel Teeth, 42in.	,,	width 8½ feet,	weight 5¾ cwt.	£12	0 0
00	with 24 Steel Teeth, 42in.	,,	width 7½ feet,	weight 5¼ cwt.	£10	10 0
00	with 28 Steel Teeth, 42in.	,,	width 8½ feet,	weight 5½ cwt.	£11	0 0
000	with 24 Steel Teeth, 46in.	,,	width 7½ feet,	weight 5½ cwt.	£11	10 0
000	with 28 Steel Teeth, 46in.	,,	width 8⅓ feet,	weight 5¾ cwt.	£12	0 0
0000	with 24 Steel Teeth, 52in.	,,	width 7½ feet,	weight 5¾ cwt.	£12	10 0
0000	with 28 Steel Teeth, 52in.	,,	width 8½ feet,	weight 6 cwt.	£13	0 0
00000	with 28 Steel Teeth, 57in.	,,	width 8½ feet,	weight 7 cwt.	£14	0 0

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HOWARD'S

ANGLO-AMERICAN RAKE.



This Rake is both light and cheap—and has the same simple and efficient Brake Arrangement for raising the teeth as the Rakes described on the previous page—which can be controlled either by the hand or the foot of the attendant.

The Teeth are of tapered Fluted Steel and are arranged so as to fall freely into the furrows or hollows.

The Axles are of Wrought Iron which can be readily removed or renewed as required.

PRICE —

With 24 Steel Teeth, 52in. Wrought Wheels, 8½ feet wide, weight 4 cwt. ... £7 10 0

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NICHOLSON'S

COMBINED SELF-ACTING AND MANUAL DELIVERY HORSE RAKES.

These Rakes are not only self-acting, but they have also a perfect manual delivery both from the seat and from behind, so that in case of any disarrangement of the self-acting mechanism, the Rake can still be worked without stoppage.

The Teeth are of H section. Wheels of Wrought Iron. The axles are strengthened by Nicholson's Patent Truss, so as to carry the seat without producing deflection.

No.	S 2 R	with	24	Steel Teeth.	Height of Wheels	42in.	Width	7ft. 8in.	Price	£11	10 0
,,	S 2 R	,,	28	,,	,,	42in.	,,	8ft. 8in.	,,	£12	0 0
,,	S 2 R	,,	32	,,	,,	42in.	,,	9ft. 8in.	,,	£12	15 0
,,	S 3 R	,,	24	,,	,,	48in.	,,	7ft. 8in.	,,	£13	10 0
,,	S 3 R	,,	28	,,	,,	48in.	,,	8ft. 8in.	,,	£14	10 0
,,	S 3 R	,,	32	,,	,,	48in.	,,	9ft. 8in.	,,	£15	10 0
,,	S 4 R	,,	24	,,	,,	54in.	,,	7ft. 8in.	,,	£15	0 0
,,	S 4 R	,,	28	,,	,,	54in.	,,	8ft. 8in.	,,	£16	0 0

NICHOLSON'S

PATENT LIGHT PATTERN MANUAL AND SELF-ACTING ANGLO-AMERICAN HORSE RAKES.

	Manual.	Combined Self-acting and Manual.
Price with 24 Flat Steel Teeth and Seat	£10 10 0	... ... £11 0 0
Price with 28 ,, ,, ...	£11 0 0	... ... £12 0 0

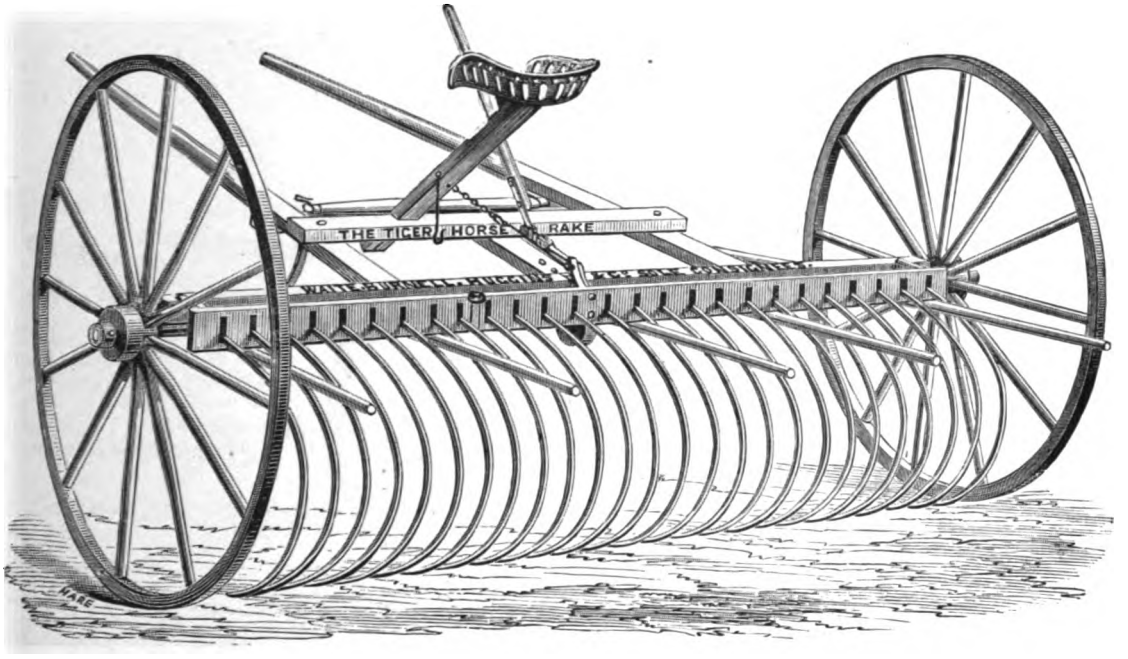
Either size with Steel Teeth of H section, 10s. extra.

These Rakes have simple adjustments for regulating the drop of the teeth and height of shafts, Locking Gear, patent Trussed Axle, Manual and Foot Delivery from the seat, and Manual Back Delivery.

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THE NEW ENGLAND

SELF-ACTING TIGER RAKE.



This Rake is rendered self-discharging by a slight pressure of the foot, locking both wheels, yet so that either wheel works perfectly independently of the other and the Rake discharges its load equally well, while turning to the right or left.

A Hand Lever is attached to the Rake, so that the operator can use either hand or foot.

The Teeth are of Spring Steel tempered in Oil and they will stand very severe tests and usage.

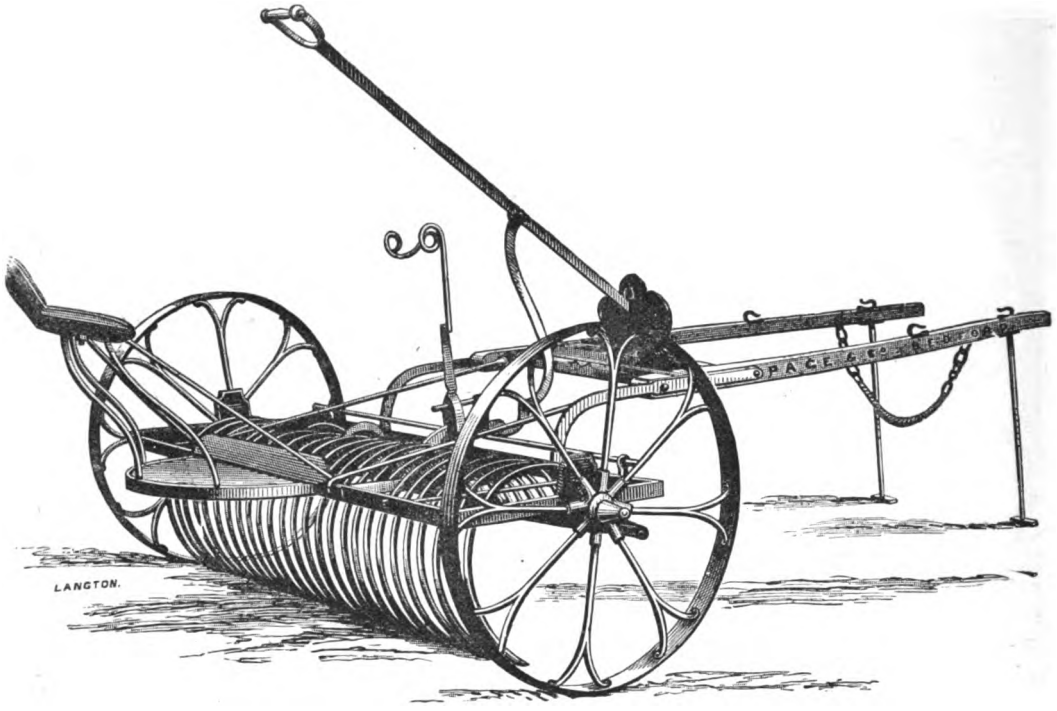
The Woodwork is constructed of best Hickory and Ash.

PRICE—

With 26 Steel Teeth Tempered in Oil, Hickory Wheels, Solid Wrought Iron Axles and Spindles £10 10 0

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E. PAGE & Co.'s
PATENT SEAT HORSE RAKE.



This Rake is strong, simple, and efficient. The Teeth are Steel, of an oval section, combining lightness with strength, of large capacity, balanced so as to adapt themselves to any irregularity of the land with the greatest facility.

The Seat is placed behind the Rake, the best possible position for the driver, both for safety and proper discharge of the load.

The Wheel Fastenings are made to slide along the frame so as to perfectly balance the weight of the driver.

Price of H R S Horse Rake with 26 Patent Oval Steel, Teeth Wrought Wheels
42in. high, width 8ft. 6in., weight 5¼ cwt. £10 0 0

E. PAGE & Co.'s
MANUAL DELIVERY RAKES—WITHOUT SEAT.

H R 20	with 20 Teeth, Cast Wheels,	36in. high, width 7ft. 9in.	...	£7 0 0
H R 22	with 22 Teeth, ,,	36in. high, width 7ft. 9in.	...	£7 5 0
H R 24 Narrow,	with 24 Teeth, ,,	36in. high, width 7ft. 9in.	...	£7 10 0
H R 24 Wide,	with 24 Teeth, ,,	36in. high, width 8ft. 10in.	...	£7 10 0
H R 26	with 26 Teeth, ,,	36in. high, width 8ft. 10in.	...	£7 15 0
H R 28	with 28 Teeth, ,,	36in. high, width 8ft. 10in.	...	£8 0 0

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RANSOME, SIMS, & HEAD'S

HORSE RAKES.

In these Rakes the Teeth are Steel, of a T Section—hung in a Rocking Frame, which is locked while the teeth are in work, but so balanced that the load is delivered with the least possible exertion.

The Wheels are provided with Side Levers, to raise or lower the frame, by which the points of the teeth can be adjusted to skim the ground or to go deeper as required.

The Teeth can also be set at a greater or less inclination to the ground by means of a segment on the shafts.

The Wheels are of Wrought Iron and the Naves are fitted with Bushes which can be renewed when worn.

Prices of Rakes with Steel Teeth, Wrought Iron Wheels, and Side Levers.

Mark.	M	M A	M B	M E	Extra Large Teeth. M C	Extra Large Teeth. M D	Extra Large Teeth. M F
Number of Steel Teeth...	20	24	28	32	24	28	32
Extreme Width.....	7ft.	8ft.	9ft.	10ft.	8ft.	9ft.	10ft.
Height of Wheels.....	3ft.	3ft.	3ft.	3ft.	3ft. 6in.	3ft. 6in.	3ft. 6in.
Price	£9 5 0	£9 12 6	£10 0 0	£10 15 0	£10 0 0	£10 15 0	£11 10 0

Any of the above Rakes can be fitted with Seat for Driver and Double Levers 15/- extra, or with Seat and New "Toe and Heel" Delivery, 20/- extra.

By the New Toe and Heel Delivery the load is delivered without the assistance of the hands, and the Teeth can be raised whether the horse is going forward or not.

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HOWARD'S

PATENT LEVER HORSE RAKES,

MANUAL DELIVERY.

In these Rakes the Driving Shafts are attached to the Central Axle, which is carried from end to end of the Implement and forms a fulcrum on which the teeth are balanced, when raised, so that the load is easily disposed of without stopping the horse.

The Teeth are made of Wrought Fluted Steel, tapered and tempered, and they are formed so as not to collect rubbish with the crop nor to get strained out of shape.

The Tilting Bar on which the Teeth are suspended is firmly held by the Patent Locking Leverage, until the load is discharged, while the Teeth are left free to adapt themselves to any irregularities of the surface.

The Rakes are made with a pole instead of shafts for countries where so required.

PRICES:—

0	with 24 Teeth,	36in.	Wrought Wheels,	7½	feet wide,	weight 4 cwt. ...	£ 9	5 0
00	with 24 Teeth,	42in.	,,	7½	feet wide,	weight 4¼ cwt. ...	£ 9	12 6
00	with 28 Teeth,	42in.	,,	8½	feet wide,	weight 4½ cwt. ...	£10	0 0
000	with 24 Teeth,	46in.	,,	7½	feet wide,	weight 4½ cwt. ...	£10	5 0
000	with 28 Teeth,	46in.	,,	8½	feet wide,	weight 5 cwt. ...	£10	15 0
X	with 24 Teeth,	32in.	Ordinary Wheels,	7½	feet wide,	weight 3¼ cwt. ...	£ 9	5 0
XX	with 24 Teeth,	36in.	Wrought Wheels,	7½	feet wide,	weight 4¼ cwt. ...	£ 9	12 6
XX	with 28 Teeth,	36in.	,,	8½	feet wide,	weight 4½ cwt. ...	£10	0 0
XXX	with 24 Teeth,	42in.	,,	7½	feet wide,	weight 4½ cwt. ...	£10	5 0
XXX	with 28 Teeth,	42in.	,,	8½	feet wide,	weight 4¾ cwt. ..	£10	15 0

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NICHOLSON'S

MANUAL DELIVERY HORSE RAKES.

In these Rakes the Wheel Axle runs from end to end of the Implement; the Teeth are of Rigid Spring Steel of a section similar to the ordinary double-headed rail, varying in length from 54 to 62 inches.

The Teeth are attached by means of a Taper Pin and Socket, which allows them to be instantly removed if required, and their height and pitch can be regulated by a Concentric Clip Joint at the back of the Shafts.

PRICES:—

Mark.			
N	with 24 Steel Teeth, Wrought Wheels,	3ft. 0in. high, width 7ft. 8in. ..	£ 8 10 0
N	with 28 Steel Teeth, ,,	3ft. 0in. high, width 8ft. 8in. ...	£ 9 0 0
N	with 32 Steel Teeth, ,,	3ft. 0in. high, width 9ft. 8in. ...	£ 9 10 0
N R R	with 24 Steel Teeth, ,,	3ft. 6in. high, width 7ft. 8in. ...	£10 0 0
N R R	with 28 Steel Teeth, ,,	3ft. 6in. high, width 8ft. 8in. ...	£10 15 0
N R R	with 32 Steel Teeth, ,,	3ft. 6in. high, width 9ft. 8in. ...	£11 10 0
N R R R	with 24 Steel Teeth, ,,	4ft. 0in. high, width 7ft. 8in. ...	£11 15 0
N R R R	with 28 Steel Teeth, ,,	4ft. 0in. high, width 8ft. 8in. ...	£12 15 0
N R R R	with 32 Steel Teeth, ,,	4ft. 0in. high, width 9ft. 8in. ...	£13 15 0

The N R R and N R R R Rakes, in addition to the Back Delivery can be fitted with seat for driver, where he can ride and work the Rakes either by hand or foot, at an extra cost of 15/- each.

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THE ALBION IRON WORKS CO.'S

HORSE RAKES,

Fitted with Drivers' Seats and Double Levers.

The Teeth in these Rakes are of H Section—their pitch being regulated by means of a hand-wheel and screw in a very simple manner.

The Wheels are made either in Wrought Iron with Solid Chilled Bushes or in Cast Iron with Wrought Hoops and Loose Bushes, which can be replaced at small cost—the price being the same in both cases.

Prices and Dimensions.

Mark.			
1 D. 20	Steel Teeth,	wheels 3ft. 6in. high, extreme width 6ft. 6in.	£ 9 10 0
2 D. 24	,,	wheels 3ft. 6in. high, extreme width 7ft. 6in.	£10 5 0
3 D. 28	,,	wheels 3ft. 6in. high, extreme width 8ft. 6in.	£11 5 0
4 D. 32	,,	wheels 3ft. 6in. high, extreme width 9ft. 6in.	£12 0 0
5 D. 20	,,	wheels 4ft. 0in. high, extreme width 6ft. 6in.	£10 5 0
6 D. 24	,,	wheels 4ft. 0in. high, extreme width 7ft. 6in.	£11 0 0
7 D. 28	,,	wheels 4ft. 0in. high, extreme width 8ft. 6in.	£12 0 0
8 D. 32	,,	wheels 4ft. 0in. high, extreme width 9ft. 6in.	£12 15 0

If without Driver's Seat each size 15/- less.

PATENT SELF-ACTING RAKES.

2 A. 24	Steel Teeth,	wheels 3ft. 6in. high	£11 0 0
3 A. 28	,,	wheels 3ft. 6in. high	£12 0 0
6 A. 24	,,	wheels 4ft. 0in. high	£11 15 0

AMERICAN HORSE RAKES.

No. A.	9ft. 6in. wide, with 12 Hickory Teeth	£ 1 16 0
No. B.	9ft. 6in. wide, with 15 Hickory Teeth	£ 2 0 0
No. C.	9ft. 6in. wide, with 23 Hickory Teeth	£ 2 10 0
No. 1.	8ft. 6in. wide, with 9 Ash Teeth	£ 1 10 0
No. 3.	9ft. 6in. wide, with 12 Ash Teeth	£ 1 15 0

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GREENHOUSES, CONSERVATORIES, ETC.

Horley's Paragon Greenhouse,

8 feet long, 6 feet wide, with Portable Wood Basement, Benches, and Floor Complete... £10 0 0

Horley's Curvilinear Greenhouse,

10 feet long, 6 feet wide, with Wood Basement, but no Fittings £12 10 0

Horley's Premier Greenhouse,

12 feet long, 9 feet wide, with Portable Wood Basement, Benches and Floor Complete... £21 0 0

Cranston's Span Roof Greenhouse,

18 feet long, 9 feet wide £30 0 0

Wheeler's Span Roofed Greenhouse,

20 feet long, 12 feet wide, with Improved Ridge Ventilation in the Roof and Simultaneous System of Ventilation in the Sides, with Plant Stages all round ... £52 0 0

Cranston's Span Roof Greenhouse,

21 feet long, 14 feet wide—Glazed without Putty—Perfect Ventilation... ... ... £60 0 0

Cranston's Lean-to Conservatory,

With Ornamental Porch Doorway, 25 feet long, 10 feet wide, Glazed without Putty ... £60 0 0

Dennis & Co.'s Best Lean-to Greenhouse,

24 feet long, 12 feet wide with Partition, Glazed with 21oz. Glass, and Painted Three Coats £60 18 6

Prices of all Sizes and Designs on Application.

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HORTICULTURAL IMPLEMENTS AND APPLIANCES.

Archways—Ornamental Wrought Iron, for Gardens, 7ft. 6in. high, 4 feet span, 14 inches deep ... ...each £ 0 15 0
Archways—Ornamental Galvanized Iron ... ...each £ 1 1 0
Barrows for Gardens ... ...each £ 1 10 0

CUCUMBER AND MELON FRAMES.

Parham's Patent—In Best Red Deal Framing.

1 Light, 4 feet by 6 feet ... ... £ 2 2 0
2 Lights, 8 feet by 6 feet ... ... £ 3 12 0
3 Lights, 12 feet by 6 feet ... ... £ 5 7 6
4 Lights, 16 feet by 6 feet ... ... £ 7 5 0
5 Lights, 20 feet by 6 feet ... ... £ 8 15 0
6 Lights, 24 feet by 6 feet £10 10 0

FLOWER VASES OR BASKETS.

Ornamental Cast Iron Flower Vase, 3ft. high, 5ft. 6in. diameter, painted any colour, and lined with Zinc Panels—No. G £6 15 0
Ornamental Cast Iron Flower Vase, 3ft. high, 6ft. 6in. diameter, fitted with Cast Iron Panels—No. M ... ... £ 8 10 0
Extra for Square Bases... ... ...each £ 1 10 0
Ornamental Cast Iron Flower Vase, 3ft. high, 4ft. 6in. diameter, lined with Zinc—No. B £ 5 0 0
Square Base extra... ... ... £ 1 10 0
Ornamental Cast Iron Flower Vase, 2ft. 11in high,. 3ft. 6in. diameter—No. C ... ... £ 3 17 6
Extra for Square Base ... ... £ 1 0 0
Ornamental Cast Iron Flower Vase, 1ft. 6in. high, 4ft. 9in. diameter—No. D ... .. £ 3 17 6
Square Base extra... ... ... £ 1 10 0
Ornamental Vase, Lined with Zinc, 2ft. 8in. high, 5ft. long, and 14in. wide—No. F ... £ 3 3 0
Ornamental Vase, 2ft. 5in. high, 2ft. 8in. diameter—No. H ... ... £ 2 10 0
Ornamental Vase, 2ft. high, 1ft. 8in. diameter—No. J ... ... £ 1 10 0
Wood Base for Ditto ... ... £ 0 10 0
Small Flower Vase for Centre of Table, painted any colour—No. K ... ... £ 1 0 0

FUMIGATOR AND MILDEW ANNIHILATOR.

Spary's Patent Fumigator,

For the destruction of Mildew on Grapes, Vines, and Plants, without injury to the fruit or foliage.

Fumigator with Lamp and one dozen Cottons ... ... £ 1 4 6
Fumigating Material, per packet... ... ... £ 0 1 8
Cottons, per gross ... ... £ 0 5 6
Fumigator to attach to ordinary House Bellows .. .. £ 0 9 6

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HORTICULTURAL IMPLEMENTS AND APPLIANCES

(CONTINUED).

GARDEN CHAIRS.

Barnard, Bishop, and Barnard's Patent Steel Chair with Elastic Helical Seat and Back.

No. 562, Japanned green, blue, crimson or any other colour ... ...each £0 17 6

No. 563, Japanned green, blue, crimson, grained or mapled ... ...each £0 15 0

No. 565 and 567, Japanned green, blue, crimson, grained or mapled ... ...each £0 17 6

Patent Steel Chair with Elbows.

No. 570, Japanned green, blue, crimson or any other colour ... ...each £1 8 0

No. 564, Japanned green, blue, crimson, grained or mapled ... ...each £1 5 0

No. 566 and 568, Japanned green, blue, crimson, grained or mapled ... ...each £1 8 0

Ornamental Cast Iron Garden Chair with Wood Seat.

No. 435, Painted pale green, maroon, or any selected colour and bronzed, wood work grained oak, 4ft. 6in. long £3 10 0

Ditto ditto ditto ditto 6ft. long £4 0 0

Single Chair, to match the above, with Wainscot Seat, painted and bronzed as above—

No. 436 ... ... £1 10 0

Ornamental Garden Chair with Awning.

Garden Chair with Awning, of best Striped Waterproof Cloth, Chair 6ft. 6in. long, painted any colour and varnished £5 10 0

Zinc Top to Awning ... ...extra £0 10 0

Box for Storing Awning... ... ...extra £0 5 0

GARDEN CHAIRS AND SEATS.

Monceaux Garden Seats with Elastic Wood Battens and Wrought Iron Ends.

	Length 4 feet 6 inches.	5 feet.	6 feet.
Painted any Colour	£1 10 0 ...	£1 12 0 ...	£1 18 0
Real Oak, stained and varnished	£1 12 6 ...	£1 15 0 ...	£2 0 0

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HORTICULTURAL IMPLEMENTS AND APPLIANCES

(CONTINUED).

GARDEN CHAIRS AND SEATS.

Garden Chair, made of Wrought Iron, to fold up.

Price—Painted Green	£0 11 6
Price—Grained Oak and varnished	£0 12 6

Garden Folding Chair, made of Wrought Iron, with Awning.

Price—Painted Green	£1 8 0
If without Awning	£0 18 0
Price—Grained Oak and varnished	£1 10 0
If without Awning	£1 0 0

Garden Chair.

Painted Oak and varnished, with Rustic Arms, 6 feet long	£1 10 0

Leicester Patent Lever Folding Chair.

Made of hard English Wood, with Copper Joints and Brass Screws	£0 6 6

Cottage Rustic Garden Seat.

Oak Painted and varnished, 5 feet	£1 6 0
Oak Painted and varnished, 6 feet	£1 10 0

Garden Chairs with Wrought Iron Ends, Wood Seat and Back.

	4 feet.	4 feet 6 inches.	5 feet.	6 feet.
Stained or Painted Green	£1 0 0	£1 1 0	£1 2 0	£1 3 0
Green with lines, or Grained Oak, varnished	£1 2 0	£1 3 0	£1 4 0	£1 5 0

Garden Chairs with Ends in Rustic Design, and Wood Seats.

Painted any Colour, 6 feet 6 inches long	£3 0 0
Painted any Colour, 7 feet long	£3 5 0
Painted any Colour, 8 feet long	£3 10 0
Painted any Colour, 9 feet long	£3 15 0

If without Arm Rests, 5/- less.

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HORTICULTURAL IMPLEMENTS AND APPLIANCES

(CONTINUED).

GARDEN CHAIRS AND SEATS.

Garden Seats with Elastic Wood Battens and Wrought Iron Frames, Without Arms.

	Length.									
	4 feet.	4ft. 6in.	5 feet.	5ft. 6in.	6 feet.
No. 1 Garden Seat, painted dark green ...	£0 18 0	£0 19 0	£1 0 0	£1 2 0	£1 4 0
No. 2 Garden Seat, painted dark green with light lines and varnished	£1 0 0	£1 1 0	£1 2 0	£1 4 0	£1 6 0
No. 4 Garden Seat, real oak, stained and varnished	£1 5 0	£1 7 0	£1 9 0	£1 11 0	£1 13 0
No. 6 as No. 2, with additional fine white lines	£1 2 0	£1 3 0	£1 4 0	£1 6 0	£1 8 0

Extra Bottom Stay to 4ft., 4ft. 6in., or 5ft. 2/-
If with Arms, 3/6 extra for all sizes.

GARDEN DRILLS.

No. 1 Patent Garden and Patching Drill... ... ... £0 10 0

No. 2 Patent Garden and Patching Drill... ... ... £0 12 6

GARDEN ENGINES.

Coleman & Morton's Hand Water Cart and Garden Engine.

This Cart is especially suited for use in Gentlemen's Gardens and Grounds and will save great labour in the conveyance of water.

It is fitted with a Spreader for Watering Lawns, Paths or Carriage Roads, and a powerful Garden Engine can be attached to throw water a considerable distance, specially adapted for watering trees, &c., or for use as a small Fire Engine.

Price, with Spreader £6 0 0
Ditto, fitted with Garden Engine £8 0 0
Shafts for Donkey or Small Pony ... ...extra £1 0 0

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HORTICULTURAL IMPLEMENTS AND APPLIANCES
(CONTINUED).

GARDEN ENGINES.

Bamford's Model Garden Engine.

To hold 10 Gallons... ... ... £3 15 0

To hold 20 Gallons... ... ... £5 0 0

Warner's Improved 3 inch Cast Iron Lift and Force Pump.

Mounted on Barrow with Suction and Delivery Screw, 18in. Branch Pipe and Spreader, and Suction Hose £7 0 0

By this Pump one man will force the water in a continuous stream to a height of fifty feet—useful in case of fire.

Pump as above with 3½in. Barrel £9 0 0

Improved Galvanized Iron Tub Garden Engine.

Painted inside and out and fitted with Warner's Registered Spreader

12 Gallons £3 3 0

16 Gallons £4 0 0

24 Gallons £5 6 0

30 Gallons £5 19 0

Engines fitted with Spreader for Watering Lawns and Walks with cock outside tub, extra £1 5 0

Garden Engine in Galvanized Iron Tub.

Fitted with arrangement for drawing water from pond or river, or from the tub itself as required.

16 Gallon Engine with Suction and Delivery Unions, Branch Pipe and Suction Rose ... £6 10 0

24 Gallon Engine ditto ditto ditto £7 16 6

30 Gallon Engine ditto ditto ditto £8 10 6

6 Gallon Garden Engine, suitable for a Lady or Child £2 12 6

Aquajects.

For Watering Flowers, Trees in Gardens, Conservatories, for Washing Windows, Carriages, Laying Dust, &c.—Throws a continuous stream £1 12 6

Small Aquaject for use as a Hand Syringe—throws a continuous stream—complete with Rose and Jet £0 16 6

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HORTICULTURAL IMPLEMENTS AND APPLIANCES
(CONTINUED).

GARDEN FOUNTAINS.

Portable Fountain and Lawn Sprinkler £1 12 0

Garden Fountains from £3 15 0 to £21 0 0 according to size and design.

GARDEN ROLLERS.

Single Cylinder with Balance Handles.

Width. Inches.	Diameter. Inches.	Price.
16	18	£1 15 0
18	18	£2 5 0
20	20	£3 0 0
22	22	£3 10 0
24	24	£4 5 0
27	27	£5 15 0

Double Cylinder with Balance Handles.

Width. Inches.	Diameter. Inches.	Price.
18	16	£2 12 6
20	18	£3 2 6
22	20	£3 17 6
24	22	£4 10 0
26	24	£5 0 0
28	26	£5 15 0
30	28	£6 15 0

GARDEN SYRINGES with Polished Handles.

With one Rose and Jet attached.

	12in. s. d.	14in. s. d.	16in. s. d.	18in. s. d.	20in. s. d.
No. 119, 1 in. Tube	4 9	6 0	7 3	—	—
No. 121, 1¼in. Tube	—	8 6	9 6	10 6	12 0
No. 125, 1½in. Tube	—	10 0	12 0	13 6	15 0

With Dew Rose, Coarse Rose, and Jet attached.

	14in. s. d.	16in. s. d.	18in. s. d.	20in. s. d.
No. 124, 1¼in. Tube	8 9	10 0	11 3	12 6
No. 126, 1⅜in. Tube	9 6	10 9	12 0	13 3
No. 127, 1½in. Tube	10 6	12 6	13 9	15 6
No. 128, 1¾in. Tube	12 0	13 0	14 6	16 6

Fitted with the Patent Inlet Valve, with Dew Rose, Coarse Rose, and Jet attached, attaining unprecedented ease of intake.

	14in. s. d.	16in. s. d.	18in. s. d.	20in. s. d.
No. 124a, 1¼in. Tube	11 0	12 3	13 6	14 9
No. 127a, 1½in. Tube	13 9	15 9	17 0	18 9
No. 128a, 1¾in. Tube	16 3	17 3	18 9	20 9

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HORTICULTURAL IMPLEMENTS AND APPLIANCES

(CONTINUED).

GARDEN TABLES, &c.

Leicester Rustic Table, light, firm, and elegant, painted oak and varnished	£1	10	0
Leicester Garden Table, with Wooden Top composed of Slats mounted on a Turned Wood Pillar, with Wrought Iron Tripod and Scroll Feet—painted any colour	£1	2	6
Ditto Ditto —real oak and varnished	£1	5	0
Patent Folding Picnic Table with Top of Wooden Slats	£0	15	0
Patent Combined Folding Reading Desk and Table...	£0	17	6
Patent Picnic Folding Stool	£0	6	0
Patent Picnic Folding Stool with Back...	£0	7	6

Portable Foot Boards, to prevent the feet coming in contact with the ground—

	4ft.	4ft. 6in.	5ft.	5ft. 6in.	6ft.
Painted any colour	4/6	5/6	6/6	7/6	8/6
If not striped and varnished	3/6	4/6	5/6	6/6	7/6

HEDGE MITTENS.

Hedge Mittens, White Leather ... ... per pair	£0	4	0
Hedge Mittens, Brown Leather ... ... per pair	£0	4	6

LAWN MOWERS—See separate Heading.

PEA TRAINERS.

These Trainers are made of Galvanized Diamond Lattice Work on a strong frame. A light iron frame, usually 8 inches wide, forms a double Standard connecting Four Trainers.

The Standards are merely pressed into the ground and the Trainers hung on them six inches from the ground line by a loop provided for the purpose.

Trainers.	s.	d.
6ft. long, 2ft. 6in. high ... ...each	3	0
6ft. long, 3ft. 0in. high ... ...each	3	9
6ft. long, 3ft. 6in. high ... ...each	4	6
6ft. long, 4ft. 6in. high ... ...each	5	3

Standards.	s.	d.
3ft. high suitable for 2ft. 6in. Trainers each	2	0
3ft. 6in. ,, 3ft. 0in. ,, ,,	2	3
4ft. 0in. ,, 3ft. 6in. ,, ,,	2	6
5ft. 0in. ,, 4ft. 6in. ,, ,,	2	9

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HORTICULTURAL IMPLEMENTS AND APPLIANCES

(CONTINUED).

PLANT PROTECTORS.

Parham's Patent Glass Wall Coping.

Fitted with Rods complete for front Curtains, 2 feet wide, 2/6—3 feet wide, 3/9 per foot run.

Parham's Patent Glazed Acme Plant Protectors.

With Truss Hinge and Iron Corner Plates, leaving interior quite free from obstruction.

6 feet by 3 feet	£2	7	6	12 feet by 3 feet	£4	0	0
6 feet by 4 feet	£3	0	0	12 feet by 4 feet	£5	0	0
6 feet by 5 feet	£3	15	0	12 feet by 5 feet	£6	5	0
6 feet by 6 feet	£4	11	0	12 feet by 6 feet	£7	10	0

River's New Registered Wall-Tree Cover ...per foot run £0 12 6

Galvanized Pea Guards, 3 feet long, with two ends to the dozen lengths...per dozen £0 9 0

STRAINED WIRE ESPALIER—FRENCH SYSTEM.

The objects of the Espalier are to expose the foliage of Fruit Trees to a more perfect light than can be obtained on a wall, and to economise space.

For training Fruit Trees the wires are generally placed eight inches apart, but the distance may be varied.

Prices of Straining Posts and Intermediate Standards.

Two Straining Posts are required for each length.

		Painted.		Galvanized.
T Iron Terminal Straining Posts,	4 feet high ...each	9/0	...	14/0
Ditto	5 feet high ...each	10/6	...	16/0
Ditto	6 feet high ...each	11/6	...	17/0
Ditto	7 feet high ...each	16,0	...	23/0
Ditto	8 feet high ...each	17/0	...	24/0
Intermediate Standards with Anchor Feet, generally placed 10 feet apart,	4 feet high ...each	1/5	...	2/2
Ditto	5 feet high ...each	1/8	...	2/11
Ditto	6 feet high ...each	2/0	...	3/6
Ditto	7 feet high ...each	2/3	...	4/0
Ditto	8 feet high ...each	2/6	..	4/1

The Intermediate Standards and Terminal Posts have Self-fixing Bases.

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HORTICULTURAL IMPLEMENTS AND APPLIANCES
(CONTINUED).
STRAINED WIRE ESPALIER—FRENCH SYSTEM (Continued).
Galvanized Wire for Espalier.

No. 13 Wire, suitable for the taller Espalier ... ...per 100 yards	£0	2	6
No. 14 Wire, suitable for the shorter Espalier ... ...per 100 yards	£0	2	0

Galvanized Raidisseurs for Straining the Wire.

One required for each wire.

Galvanized Raidisseurs ... ...per dozen	£0	3	0
Wrought Iron Key for winding ditto	£0	0	4

Single Cordon for Training Fruit Trees.

Terminal Posts, 12 inches above ground, painted... ... ...each	£0	4	0
Ditto ditto galvanized ... ...each	£0	5	3
Intermediate Standards with pointed feet, generally placed 10 feet apart, painted ...each	£0	0	5
Ditto ditto ditto galvanized...each	£0	0	7

WATER BARROWS.

Galvanized Iron Water Barrows with Painted Frame and Two Wheels	15 Gallons ...	£1	18	0
Ditto ditto	20 Gallons ...	£2	3	0
Ditto ditto	30 Gallons ...	£2	8	0
Ditto ditto	40 Gallons ...	£2	14	0
Extra Strong Wrought Iron Water Barrow with Wrought Iron Frame and Strong Galvanized Rivetted Cistern and Two Wheels	40 Gallons ...	£5	10	0
Ditto ditto	50 Gallons ...	£6	0	0
Improved Wrought Iron Swing Water Barrow with Three Wheels and Strong Galvanized Rivetted Cistern	40 Gallons ...	£5	10	0
Ditto ditto	50 Gallons ...	£6	0	0

WATERING POTS—GALVANIZED.

1	2	3	4	5 gallons.
37/6 ...	41/6 ...	44/6 ...	53/6 ...	62/0 per dozen.

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HOSE.

WOVEN CANVAS HOSE.

	s.	d.
½ inch ... ...per foot	0	3½
⅝ inch ... ... „	0	4
¾ inch ... ... „	0	5
1 inch ... ... „	0	6
1¼ inch ... ... „	0	7
1½ inch ... ... „	0	9
1¾ inch ... ... „	1	0
2 inch ... ...per foot	0	10
2¼ inch ... ... „	0	11
2½ inch ... ... „	1	0
2¾ inch ... ... „	1	1
3 inch ... ... „	1	2
3½ inch ... ... „	1	4

Larger sizes up to 10 inch made to order.

This Hose can be Burnetized at 3d. per yard extra

GUN METAL HOSE UNIONS.

	s.	d.
1 inch...	4	8
1¼ inch...	5	6
1½ inch...	6	3
1¾ inch...	8	0
2 inch...	9	6
2¼ inch	11	0
2½ inch...	13	0
2¾ inch...	16	0
3 inch..	19	6

COPPER BRANCH PIPES.

	s.	d.
1 inch...	14	6
1¼ inch...	15	9
1½ inch...	16	9
1¾ inch...	19	0
2 inch...	22	3
2¼ inch...	24	0
2½ inch...	25	0
2¾ inch...	26	9
3 inch...	27	9

BEST INDIA-RUBBER GARDEN HOSE.

	½in.	¾in.	1in.	
Light, for Watering Croquet Lawns and Cricket Fields, 1 Ply...	/11 ...	1/1 ...	1/6	per yard.
Ditto Ditto Ditto 2 Ply...	1/2 ...	1/4 ...	1/6	„
Best Delivery Hose .. ..1 Ply...	/7 ...	/8 ...	/9	per foot.
Ditto ... ...2 Ply...	/8 ...	/9 ...	/10	„
Best Patent Suction Hose...	/9 ...	/10 ...	1/0	„

BREWERS' HOSE,

Specially Prepared for Beer and Ale.

Size Internal Diameter Inches.	⅝	¾	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4
2 Ply, per foot ...	/10	/11	1/2	1/5	1/7½	1/11	2/3	2/5	2/6	2/10	3/1	3/7	3/8	4/1	4/4
3 Ply per foot, ...	1/0	1/2	1/6	1/9	2/0	2/2	2/6	2/9	3/0	3/4	3/7	4/1	4/5	4/10	5/3
4 Ply per foot, ...	1/4	1/6	1/11	2/3	2/6	2/8	2/10	3/2	3/6	4/0	4/5	4/11	5/1	5/7	6/1
5 Ply per foot, ...	1/7	1/10	2/4	2/9	3/0	3/4	3/9	4/1	4/5	4/10	5/3	5/10	6/2	6/9	7/0

Two Ply will bear a moderate pressure. Three Ply is for general purposes.

Four and Five Ply for great pressure.

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LEATHER DELIVERY AND SUCTION HOSE.

COPPER RIVETED DELIVERY HOSE.

To stand a pressure of from 80 to 100lbs. per square inch.

		s.	d.
1 inch	...per foot	1	5
1½ inch	,,	1	9
1¾ inch	,,	2	0
2 inch	,,	2	2
2¼ inch	,,	2	4
2½ inch	,,	2	7
2¾ inch	,,	3	0
3 inch	,,	3	4

COPPER RIVETED DELIVERY HOSE, For Steam Fire Engines.

To stand a pressure of from 120 to 150lbs. per square inch.

		s.	d.
2 inch	...per foot	2	6
2¼ inch	,,	2	9
2½ inch	,,	3	0
2¾ inch	,,	3	3
3 inch	,,	3	6
3½ inch	,,	3	9
4 inch	,,	4	5

Hand Loops and Straps included.

CRANE PIPES.

		s.	d.
4 inch	...per foot	3	11
5 inch	,,	4	8
6 inch	,,	5	6
7 inch	,,	6	4
8 inch	,,	7	1
9 inch	,,	7	11
10 inch	,,	8	9

COPPER RIVETED SUCTION HOSE.

Equal in strength to 4-ply India Rubber Suction Hose.

		s.	d.
1½ inch	...per foot	3	9
1¾ inch	,,	3	11
2 inch	,,	4	1
2¼ inch	,,	4	5
2½ inch	,,	4	11
2¾ inch	,,	5	3
3 inch	,,	5	9
3½ inch	,,	6	5
4 inch	,,	7	3

FLEXIBLE SUCTION HOSE, Bound with Copper Wire outside.

Equal in strength to 3-ply India-Rubber Suction Hose.

		s.	d.
1½ inch	...per foot	3	3
1¾ inch	,,	3	4
2 inch	,,	3	5
2¼ inch	,,	3	8
2½ inch	,,	4	0
2¾ inch	,,	4	5
3 inch	,,	4	9

COPPER RIVETED SUCTION HOSE, With Copper Spiral Wire inside.

Very durable.

		s.	d.
1½ inch	...per foot	5	9
1¾ inch	,,	6	5
2 inch	,,	7	0
2¼ inch	,,	7	10
2½ inch	,,	8	5
2¾ inch	,,	9	7
3 inch	,,	10	6
3½ inch	,,	12	5
4 inch	,,	14	9

INDIA-RUBBER DELIVERY AND SUCTION HOSE.

Sizes, internal diameter.	DELIVERY. PER FOOT RUN.				SUCTION. PER FOOT RUN.				Embedded Suction Hose, with spiral wire core, covered for Acids, Steam, and Brewing Purposes. PER FOOT RUN	
IN.	1-PLY.	2-PLY.	3-PLY.	4-PLY.	1-PLY.	2-PLY.	3-PLY.	4-PLY.	3-PLY.	4-PLY.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
⅜	0 5	0 7	0 9	1 0	0 7	0 8	0 10	1 2	...	...
½	0 6	0 8	0 10	1 1	0 8	0 10	1 1	1 4	...	...
⅝	0 7	0 9	0 11	1 3	0 9	1 0	1 2	1 6	2 0	2 2
¾	0 8	0 10	1 1	1 5	0 11	1 2	1 4	1 9	2 2	2 7
1	0 11	1 1	1 5	1 10	1 2	1 4½	1 8	2 2	2 6	2 11
1¼	1 1	1 3	1 7	2 1	1 5	1 8	1 11	2 5	2 10	3 2
1½	1 3	1 5½	1 10	2 4	1 7	1 10½	2 2	2 8	3 1	3 6
1¾	1 5	1 8	2 0	2 7	1 10	2 2	2 5	3 0	3 6	4 0
2	1 7	1 10½	2 3	2 10	2 1	2 5	2 9	3 4	4 0	4 7
2¼	1 9	2 1	2 6	3 2	2 4	2 9	3 1	3 10	4 8	5 3
2½	1 11	2 3	2 9	3 6	2 7	3 1	3 5	4 3	5 2	5 10
2¾	2 1	2 5½	3 0	3 10	2 10	3 5	3 9	4 8	5 9	6 6
3	2 3	2 8	3 3	4 2	3 1	3 9	4 2	5 1	6 3	7 3
3½	2 6	2 10½	3 6	4 6	3 4	4 1	4 7	5 6	6 10	8 0
3½	2 8	3 0½	3 9	4 10	3 8	4 5	5 0	6 0	7 6	8 9
3¾	2 11	3 4	4 3	5 3	4 0	4 9	5 5	6 7	8 3	9 6
4	3 2	3 8	4 7	5 7	4 4	5 1	5 10	7 1	9 0	10 3

1-Ply is not intended to withstand much pressure.
2-Ply is of medium strength.
3-Ply will withstand a pressure of 75lbs. per square inch.
4-Ply is made to withstand a pressure of 150lbs per square inch.

CANVAS SUCTION HOSE.

3-ply, and Waterproofed with Special Composition.

		s.	d.
1½ inch	...per foot	1	8
1¾ inch	,,	1	11
2 inch	,,	2	2
2¼ inch	,,	2	6
2½ inch	,,	2	9
3 inch	,,	3	4

LEATHER FIRE BUCKETS.

		s.	d.
Sewn Top	...each	12	0
Ordnance	...each	10	6

CANVAS FIRE BUCKETS.

		s.	d.
8 inch ...	...each	2	3
11 inch ..	...each	3	3

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HEADLY'S

PATENT HYDRAULIC APPARATUS OR HOSE REEL.



This Apparatus consists of a drum mounted on a pair of wheels and supplied with a sufficient length of flexible pipe. The water passes through the whole length of the pipe and is distributed either by a rigid spreader in front, or by a man.

The first cost is much less than that of a horse and cart, and the watering is done more quickly and efficiently at less expense than with a Water Cart.

PRICES:—

No. 8 Hose Reel with Spreader—not including Brass Connecting Union or India-Rubber Pipe—to work from 50 to 150 yards of 2in. Pipe	£20	0	0
No. 7 Hose Reel with Spreader—to work from 50 to 100 yards of 1½in. Pipe	£18	0	0
No. 6 Hose Reel with Spreader—to work from 50 to 100 yards of 1¼in. Pipe	£15	15	0

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HEADLY'S

PATENT HOSE REELS.



PRICES:—

No. 5 Hose Reel with Spreader and Union—not including India-Rubber Pipe—to work from 60 to 150 feet of 1in. Pipe—can be worked by a man £8 10 0

No. 4 Hose Reel ditto ditto to work from 60 to 200 feet of ¾in. Pipe—can be worked by a man £7 10 0

No. 3 Hose Reel ditto ditto to work from 60 to 150 feet of ¾in. Pipe—can be worked by a man £6 10 0

No. 2 Hose Reel ditto ditto to work from 25 to 120 feet of ½in. Pipe—can be worked by a lad... ... ... £4 4 0

No. 1 Hose Reel with Three Wheels—complete with Spreader and Union—not including India-Rubber Pipe—to work from 25 to 70 feet of ⅜in. Pipe—can be worked by a lady £3 10 0

HAYNES'

PATENT GARDEN HOSE BARROWS.

No. 3 Hose Barrow, to carry 150 feet of ¾in. Hose £6 0 0

No. 2 Hose Barrow, to carry 60 feet of ¾in. Hose £5 0 0

No. 1 Hose Barrow, to carry 60 feet of ⅝in. Hose £4 0 0

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HOSE REELS FOR WINDING GARDEN HOSE.

Wrought Iron Hose Reels with Two Travelling Wheels.

	Painted.	If with Galvanized Reel.
Reel 17in. diameter, 14in. wide	£1 1 0	... £1 3 6
Reel 20in. diameter, 14in. wide	£1 4 0	... £1 6 6
Reel 23in. diameter, 18in. wide	£1 8 0	... £1 11 6
Reel 26in. diameter, 18in. wide	£1 12 0	... £1 16 0

Improved Wrought Iron Hose Reels with Three Wheels, Lever, and Handle.

Specially adapted for laying out or curling up Hose without dragging it over the ground.

	Painted.	If with Galvanized Reel.
Reel 17in. diameter, 14in. wide	£1 4 0	... £1 6 6
Reel 20in. diameter, 14in. wide	£1 7 0	... £1 9 6
Reel 23in. diameter, 18in. wide	£1 10 0	... £1 14 6
Reel 26in. diameter, 18in. wide	£1 16 0	... £2 0 0

Improved Wrought Iron Self-Winding Hose Reels with Three Wheels.

	Painted.	If with Galvanized Reel.
Reel 17in. diameter, 14in. wide	£1 6 6	... £1 9 0
Reel 20in. diameter, 14in. wide	£1 9 6	... £1 12 0
Reel 23in. diameter, 18in. wide	£1 12 6	... £1 17 0
Reel 26in. diameter, 18in. wide	£1 18 6	... £2 2 6

	½in. 2-Ply.	⅝ & ¾in. 2-Ply.	1in. 2-Ply.	
Reel 17in. diameter, 14in. wide, will carry	200 feet	120 feet	65 feet	India-Rubber Hose.
Reel 20in. diameter, 14in. wide, will carry	200 feet	160 feet	100 feet	,,
Reel 23in. diameter, 18in. wide, will carry	450 feet	300 feet	170 feet	,,
Reel 26in. diameter, 18in. wide, will carry	600 feet	400 feet	300 feet	,,

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HOT WATER PIPES.

2in. Hot Water Pipes in 6ft. lengths ... ...per yard £0 1 6

3in. Hot Water Pipes in 6ft. lengths ... ... per yard £0 2 6

4in. Hot Water Pipes in 6ft. and 9ft. lengths... ... ...per yard £0 3 0

	2 inch.	3 inch.	4 inch.
Under 6ft. lengths ... ...per yard	1/8 ...	2/10 ...	3/6

BOILERS FOR HOT WATER APPARATUS.

	Length. Inches.	Width. Incher.	Height. Inches.	Heating Power. Feet of 4in. Pipe.	Price.
Flat Boiler with 2 or 3 Sockets ...	18	18	8	100	£1 10 0
Arch Boiler with Water Bridge and 2 Sockets	18	18	15	150	£3 0 0
Ditto ditto	21	20	18	250	£4 10 0
Ditto ditto	24	24	20	400	£5 15 0
Ditto ditto	30	24	20	550	£6 10 0
Ditto ditto	36	28	22	800	£11 10 0

Furnaces, Soot Doors, &c., extra.

WROUGHT WELDED PLAIN SADDLE BOILERS.

Length. Inches.	Inside of Arch. Inches.	Outside of Arch. Inches.	Heating Power. Feet of 4in. Pipe.	Price.
	Width Depth.	Width Depth.		
18	10 by 11	14 by 13	200	£2 2 6
21	10 by 11	14 by 13	225	£2 7 6
18	12 by 12	16 by 14	250	£2 10 0
24	10 by 11	14 by 13	250	£2 10 0
21	12 by 12	16 by 14	275	£2 15 0
24	12 by 12	16 by 14	300	£3 0 0
27	12 by 12	17 by 14½	320	£3 5 0
30	12 by 12	17 by 14½	350	£3 10 0
33	12 by 12	17 by 14½	400	£4 0 0
33	14 by 14	19 by 16½	450	£4 10 0
36	14 by 14	19 by 16½	475	£4 15 0

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WROUGHT WELDED PLAIN SADDLE BOILERS (CONTINUED).

Length. Iinches.	Inside of Arch. Inches.	Outside of Arch. Inches.	Heating Power. Feet of 4in. Pipe.	Price.
	Width Depth.	Width Depth.		
42	14 by 14	20 by 17	600	£5 12 6
42	16 by 16	22 by 19	700	£7 0 0
48	16 by 16	22 by 19	800	£8 0 0
48	18 by 18	24 by 21	900	£9 0 0
48	21 by 21	27 by 24	1000	£10 0 0
48	18 by 24	24 by 27	1000	£10 0 0
48	24 by 21	30 by 24	1150	£11 10 0
60	21 by 21	27 by 24	1250	£12 10 0
60	18 by 24	24 by 27	1250	£12 10 0
60	24 by 21	30 by 24	1400	£14 0 0

Flow and Return Sockets and Fitti ig to ditto, extra; 2 inch 3/9, 3 inch 4/9, 4 inch 6/0 each.
Elbow ditto, 2 inch 6/0, 3 inch 7/3, 4 inch 9/0 each.

HARTLEY & SUGDEN'S

INDEPENDENT CONICAL BOILERS.

Fitted with Flow and Return Sockets, Round Smoke Flue, Ashes Box, Sand Rim and Cover, and Cast Hopper, with Cast Fire Dish.

Height.	Diameter. Fitted with 2in. Sockets.	Heating Power. Feet of 2in. Pipe.	Price.
	Inches.		
2ft. 8in.	13	250	£4 4 0
3ft. 0in.	13	300	£4 15 0
3ft 6in.	15	400	£5 12 6
4ft. 0in.	15	500	£6 12 6
4ft. 0in.	18	750	£9 0 0
4ft. 6in.	18	900	£10. 0 0
5ft. 0in.	18	1050	£11 0 0
5ft. 0in.	21	1250	£12 10 0

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LUMBY'S

PATENT EXCELSIOR BOILERS.

These are upright Tubular Boilers made of Best Wrought Iron Plates ($\frac{5}{16}$ or $\frac{3}{8}$ thick according to size of Boiler) firmly welded together without seam or rivet, and tested to a heavy Steam or Hydraulic Pressure.

The Boilers have the largest possible heating surface and receive the direct action of the fire on every point of their inner surfaces.

The heated Gases pass over the entire surface of the Boilers before passing into the chimney—so that great economy of fuel is secured—and the Boilers will soon be found to save their cost thereby.

The Boilers, having large internal capacity, may be left from twelve to twenty hours without attention and are free from the liability of the coke lodging and leaving the fire hollow.

The Feeding Tube being through an opening in the upper dome of the Boilers, every facility is given for feeding from the surface.

The proportions of the Boilers may be varied from the regular sizes given, to suit the convenience of the Builder and can be adapted to situations where drainage is shallow.

Prices of Lumby's Patent Excelsior Boilers with Plain Midfeathers.

Size of Boiler. Height. Inches.	Size of Boiler. Diameter. Inches.	Heating Power. Feet of 4in. Pipe.	Price.	Complete Set of Furnace Fittings.
30	18	500	£ 8 10 0	£2 12 0
26	20	500	£ 8 10 0	£2 12 0
30	22	800	£11 0 0	£2 18 0
26	24	800	£11 0 0	£2 18 0
36	26	1000	£14 10 0	£3 3 0
30	28	1000	£14 10 0	£3 3 0
42	30	1500	£19 0 0	£3 12 0
48	36	2000	£25 0 0	£4 10 0
54	42	3000	£35 0 0	£5 15 0

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HOT WATER FITTINGS.

	2 inch. s.	d.	3 inch. s.	d.	4 inch. s.	d.
Common Elbow	1	8	3	0	3	9
Long Elbow	2	6	4	2	5	0
Reducing Elbow	3	0	4	0	4	6
Elbow with Double Sockets	2	3	3	9	4	8
Outside Bevil Elbow	2	6	3	8	5	0
Inside Bevil Elbow	2	0	3	0	3	6
Syphon Bend, open	2	6	4	2	6	0
Ditto close	2	3	3	8	5	3
Ditto 3-way	3	8	6	0	8	0
Ditto 4-way	5	0	7	9	11	9
Outlet Syphon, 3-way	4	0	6	8	9	3
Ditto 3-way, with Socket	4	6	7	9	9	6
T Piece with 2 Sockets on upper part	3	0	4	9	6	0
Ditto with 1 Socket on upper and 1 on lower parts	2	6	5	0	5	6
Ditto with 3 Sockets	2	9	5	9	7	3
Ditto with 1 Socket	2	3	4	0	5	0
Cross Piece	3	6	5	9	6	8
Double Elbow, inside	3	0	4	6	6	8
Ditto outside	3	9	5	0	8	4
Elbow Syphon, 2-way	3	3	5	0	7	0
Ditto 3-way	4	6	7	3	10	3
Ditto 4-way	6	9	10	6	13	6
S Piece, inside	2	6	4	6	5	6
Ditto outside	3	6	5	6	6	6
Outlet Syphon with 3 Sockets	3	0	5	0	7	9
Ditto with 2 Sockets	2	9	4	9	6	3
Flange Socket	3	0	3	6	4	0
Flange Socket Elbow	3	4	3	8	4	0
Double Socket	1	8	2	9	3	8
Collar	1	3	1	9	2	0
Flange Spigot	2	6	2	9	3	6
Cap	1	0	1	6	1	9
Blank Spigot	0	9	1	0	1	6
Hat Piece	3	0	3	6	4	0
Y Piece or Branch Syphon with 1 Socket	4	0	5	6	6	3
Ditto Ditto with 2 Sockets	3	0	5	0	6	0
H Piece	4	6	7	0	8	0

Reducing Sockets	4″ to 3″ 3/6	4″ to 2″ 3/0	3″ to 2″ 2/6
Reducing Nipple	4″ to 3″ 2/3	4″ to 2″ 2/0	3″ to 2″ 1/9
Reducing Nipple	4″ to 3″ 1/9	4″ to 2″ 1/8	3″ to 2″ 1/4

Improved Patent Stop Valve with Turned Brass Centres and Gland.

Constructed as to be able to remove the valve for repairs, without breaking the socket jointed in the pipe.

2 inch.	3 inch.	4 inch.
£0 17 6	£1 2 6	£1 7 6 each.

Improved Throttle Valve with Brass Valve, Spindle, and Glands.

Either Double Socket or Socket and Spigot.

2 inch.	3 inch.	4 inch.
£0 14 0	£0 19 0	£1 1 0 each.

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HURDLES, FENCING, AND FIELD GATES.

Wrought Iron Hurdles with Solid Flat Bars.

No. 1. Improved Flat Bar Light Cattle Hurdle, 6ft. long, 3ft. 4in. above ground, top bar of $\frac{5}{8}$in. round iron—and the lower four of flat iron 1in. wide, and $\frac{1}{4}$in thick, placed with the edge upwards. There are three uprights to each Hurdle $1\frac{1}{4}$in. wide, and $\frac{1}{4}$in. thick, the two end ones have pronged feet. Covered with one coat of black varnish. ... ... each £0 4 3

No. 2. Improved Flat Bar Strong Cattle Hurdle, 6ft. long, 3ft. 6in. above ground, top bar of $\frac{5}{8}$in. round iron—and the lower four of flat iron 1in. wide, and $\frac{1}{4}$in. thick, placed with the edge upwards. There are three uprights, the two end ones being $1\frac{1}{4}$in. wide, and $\frac{5}{16}$in. thick, with pronged feet, and the centre upright $1\frac{3}{8}$in. wide, and $\frac{5}{16}$in. thick. Covered with one coat of black varnish ... ... each £0 4 9

No. 3. Improved Flat Bar Ox Hurdle, 6ft. long, 4ft. above ground, top bar of $\frac{3}{4}$in. round iron—three of the lower bars are of flat iron 1in. wide, and $\frac{1}{4}$in. thick, placed with the edge upwards, the bottom bar but one being 1in. wide and $\frac{3}{8}$in. thick. The two end uprights are $1\frac{1}{4}$in. wide and $\frac{5}{16}$in. thick, with pronged feet and the centre upright is $1\frac{1}{2}$in. wide and $\frac{3}{8}$in. thick. Covered with one coat of black varnish .. .. each £0 6 2

Wrought Iron Hurdles with Solid Round Bars.

No. 4. Round Bar Sheep Hurdle, 6ft. long, 3ft. above ground, with five bars all $\frac{1}{4}$in. diameter, and three uprights $1\frac{1}{4}$in. wide and $\frac{1}{4}$in. thick. The two end uprights have single pronged feet. Covered with one coat of black varnish ... each £0 3 5

No. 5. Round Bar Light Cattle Hurdle, 6ft. long, 3ft. 4in. above ground, with five bars all of round iron, the top one $\frac{5}{8}$in. diameter and the lower ones $\frac{1}{2}$in. diameter. The three uprights are $1\frac{1}{4}$in. wide and $\frac{1}{4}$in. thick, and the two end ones with pronged feet. Covered with one coat of black varnish... ... ... each £0 3 10

No. 6. Round Bar Strong Cattle Hurdle, 6ft. long, 3ft. 6in. above ground with five bars all of round iron, the top one $\frac{5}{8}$in. diameter and the lower ones $\frac{1}{2}$in. diameter. The three uprights are $1\frac{3}{8}$in. wide and $\frac{5}{16}$in. thick, and the two end ones with pronged feet. Covered with one coat of black varnish ... ... each £0 4 6

No. 7. Round Bar Ox Hurdle, 6ft. long. 3ft. 9in. above ground, with five bars all of round iron $\frac{5}{8}$in diameter. The three uprights are all $1\frac{1}{4}$inch wide an l $\frac{3}{8}$in. thick, the two end ones with pronged feet. Covered with one coat of black varnish, each £0 6 4

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HURDLES, FENCING, AND FIELD GATES

(CONTINUED).

Wrought Iron Sheep-Fold Hurdles on Wheels.

No. 8. Wrought Iron Sheep-Fold Hurdle on four wheels, each 7in. diameter, length of Hurdle 12ft., height 3ft. 4in., with T iron top and square corners ... each £1 4 6

No. 9. Wrought Iron Sheep-Fold Hurdle on four wheels, each 7in. diameter, length of Hurdle 12ft., height 3ft. 4in., with T iron top and ends, with rounded top corners ... ... each £1 5 0

No. 10. Improved Wrought Iron Sheep-Fold Hurdle on four wheels, each 7in diameter, length of Hurdle 12ft., height 3ft. 4in., with T iron top as before; the inner wheels are brought close to the Hurdle, thus avoiding any danger of sheep entangling their legs ... ... each £1 4 0

No. 11. Improved Sheep-Fold Hurdle on four wheels, each 7in. diameter, length of Hurdle 12ft., height 3ft. 4in., with two adjustabe sliding Lamb creeps, to admit varying sizes of lambs ... ... each £1 14 6

Wrought Iron Gates 3ft. wide with hangings, suitable for attaching to any of the above Hurdles ... ... each £0 15 0

No. 12. Wrought Iron Five-Barred Sheep-Fold Hurdle, 6ft. long, 3ft. high, with two stays to support it in a leaning position—saving much labour in fixing—connected by a link or chain ... ... each £0 4 8

Improved Round Bar Wrought Iron Sheep Hurdle.

No. 13. This Hurdle is 6ft. long and 3ft. above ground. The three upright bars are all made pointed at the bottom but without projecting feet, so as to penetrate the ground easily, the top and bottom bars are $\frac{5}{8}$in. diameter, and the other three bars are $\frac{1}{2}$inch diameter; the upright bars are $1\frac{3}{8}$in. wide and $\frac{5}{16}$in. thick; the Hurdles connect by a link attached to the top bar. Covered with one coat of black varnish ... ... each £0 4 1

Improved Flat Bar Wrought Iron Sheep Hurdle with Five Bars.

No. 14. This Hurdle is 6ft. long and 3ft. above ground. The top bar is of round iron $\frac{5}{8}$in. diameter, the bottom bar is 1in. wide and $\frac{3}{8}$in. thick, the other three bars are 1in. wide and $\frac{1}{4}$in. thick; the end uprights are $1\frac{1}{4}$in. wide and $\frac{5}{16}$in. thick; the middle one $1\frac{3}{8}$in. wide and $\frac{5}{16}$in. thick. Covered with one coat of black varnish ... ... each £0 4 5

Improved Flat Bar Wrought Iron Sheep Hurdle with Four Bars.

No. 15. This Hurdle is 6ft. long and 2ft. 6in. above ground, the top bar is of round iron $\frac{5}{8}$in. diameter, the bottom bar is 1in. wide and $\frac{3}{8}$in. thick, the two other bars are 1in. wide and $\frac{1}{4}$in. thick; the end uprights are $1\frac{1}{4}$in wide and $\frac{5}{16}$in. thick, and the middle one is $1\frac{3}{8}$in. wide and $\frac{5}{16}$in. thick; the end uprights are made double thickness from the bottom to three inches above the ground line to compensate for wear and tear of frequent setting. Covered with one coat of black varnish ... ... each £0 4 2

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HURDLES, FENCING, AND FIELD GATES
(CONTINUED).

Unclimbable Hurdles of Wrought Iron with Round Vertical Bars.

No. 16. Strong Wrought Iron Unclimbable Hurdle is 6ft. long and 4ft above the ground line, with pronged feet. The end uprights and the two horizontal bars are 1½in. wide and ⅜in. thick; the vertical bars are of round iron ½in. diameter placed 3¼in. apart, pointed at top and riveted at the bottom into the horizontal bar. This Fence is suitable for enclosing gardens or public situations ... each £0 9 5

No. 17. Extra Strong Wrought Iron Unclimbable Hurdle is 6ft. long and 4ft. above the ground line, with pronged feet. The end uprights and the two horizontal bars are 1½in. wide and ⅜in. thick; the vertical bars are of round iron ⅝in. diameter placed 3⅜in. apart, pointed at the top and riveted at the bottom into the horizontal bar ... ... each £0 11 10

Unclimbable Wrought Iron Hurdles with Square Vertical Bars.

No. 18. Extra Strong Wrought Iron Unclimbable Hurdle is 6ft. long and 4ft. above the ground line, with pronged feet. The end uprights and two horizontal bars are 1½in. wide and ⅜in. thick; the vertical bars are of ½in. square iron, placed with the angle in front, 3⅜in. apart, pointed at the top and riveted at the bottom into the horizontal bar ... ... each £0 11 0

Strong Wrought Iron Game Proof Hurdle.

No. 19. Extra Strong Wrought Iron Hurdle is 6ft. long and 4ft. above ground line, with pronged feet. The end uprights are 1½in. wide and ⅜in. thick; the horizontal bars are 1¼in. wide and ⅜in. thick; the vertical bars ⅜in. diameter, have bowed tops and are 4⅜in. apart in the upper and 1½in. apart in the lower division; the middle bar is 2ft. 6in. high—very strong and ornamental ... ... each £0 12 6

Extra Strong Wrought Iron Hurdle.

No. 20. Extra Strong Wrought Iron Hurdle, 6ft. long, 4ft. high above ground, with end uprights 1½in. wide and ⅜in. thick; the horizontal bars 1¼in. wide and ⅜in. thick, the vertical bars are 1in. wide and ¼in. thick, pointed at the top and riveted at the bottom into the horizontal bar, 2½in. apart in the lower portion and 6in. apart in the upper portion, the middle bar is 2ft. 6in high—a very strong hurdle and difficult to climb ... ... each £0 11 0

Game Proof Garden Hurdles.

No. 21. Game Proof Garden Hurdle is 6ft. long and 5ft. 6in. high, the end uprights are 1¼in. wide and ¼in. thick, the two horizontal bars are 1in. wide and ¼in. thick, the vertical wires are ¼in. diameter placed 1¼in. apart ... . each £0 5 5

No. 22. Game Proof Hurdle is 6ft. long, 2ft. 6in. high, with extra strong game proof wire netting attached to the iron framework ... ... each £0 4 8

Unclimbable Game Proof Deer Hurdle.

No. 23. Unclimbable Game Proof Deer Hurdle is 6ft. long and 5ft. 6in. high, the end uprights are 1⅜in. wide and ⅜in. thick, the upright bars are ⅜in. diameter, 1½in. apart in the lower portion and 3in. apart in the upper portion, the game proof part is 3ft. high .. .. each £0 15 6

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HURDLES, FENCING, AND FIELD GATES

(CONTINUED).

Continuous Wrought Iron Flat Bar Fences.

No. 1. For Sheep or Light Cattle—Five-bar Continuous Fence Standards with double prong feet 3ft. apart, 3ft. 4in. above ground and 13in below—Joint Standards 1½in. wide and ¼in. thick—Intermediate Standards 1¼in. wide and ¼in. thick—Top Bar ⅝in. round iron, and the other four 1in. wide and ¼in. thick...per yard £0 2 0

Cast Terminal Posts for ditto ... ... each £0 10 6

No. 2. For Cattle or Horses—Five-bar Continuous Fence 3ft. 6in. above ground and 13in. below—Standards with double-pronged feet, 3 feet apart—Joint Standards 1½in. wide and ⅜in. thick—Intermediate Standards 1⅜in. wide and $\frac{5}{16}$in. thick Top Bar ⅝in. round iron and the other four 1in. wide and ¼in. thick per yard £0 2 3

Cast Terminal Post for ditto .. .. each £0 13 6

No. 3. For Cattle or Horses— Extra Strong Five-bar Continuous Fence 3ft. 9in. above ground and 14in. below—Standards with double pronged feet, 3ft. apart—Joint Standards 1⅝in. wide and ⅜in. thick—Intermediate Standards 1½in. wide and ⅜in. thick—Top Bar ¾in. round Iron, and the other four 1in. wide and ¼in. thick. Good general purpose Fence... ... ... per yard £0 2 7

Cast Terminal Posts for ditto ... ... each £0 14 6

No. 4. For Heavy Cattle or Horses—Extra Strong Six-bar Continuous Fence 4ft. 6in. above ground and 15in. below—The Iron is of the same size as in No. 3 Fence —Very Strong Fence ... ... per yard £0 3 0

Cast Terminal Posts for ditto ... ... each £0 16 9

Continuous Wrought Iron Round Bar Fences.

No. A. For Sheep or Light Cattle—Five-bar Continuous Fence 3ft. 4in. high and 12in. below ground—Standards with double pronged feet 3ft. apart—Joint Standards 1½in. wide and ¼in. thick—Intermediate Standards 1¼in. wide and ¼in. thick—Top bar ⅝in. round, the four other horizontal bars ½in. diameter ... per yard £0 1 10

Cast Iron Terminal Posts for ditto ... ... each £0 10 6

No. B. For Light Cattle—Five-bar Continuous Fence 3ft. 6in. high and 13in. below ground—Standards with double pronged feet 3ft. apart—Joint Standards 1½in. wide and ⅜in. thick— Intermediate Standards 1⅜in. wide and $\frac{5}{16}$in. thick—Top horizontal bar ⅝in. diameter, the other four ½in. diameter ... ... per yard £0 2 1

Cast Iron Terminal Posts for ditto ... ... each £0 13 6

No. C. For Cattle or Horses—Five-bar Continuous Fence 3ft. 9in. high and 14in. below ground—Standards 4ft. apart with double pronged feet—Joint Standards 1⅝in. wide and ⅜in. thick—Intermediate Standards 1½in. wide and ⅜in. thick—Top bar ¾in. diameter, the other four ⅝in. diameter ... ... per yard £0 2 8

Cast Iron Terminal Posts for ditto ... ... each £0 14 6

No. D. For Heavy Cattle or Horses—Six-bar Continuous Fence 4ft. 6in. high and 15in. below ground—Standards 4ft. apart with double pronged feet—Iron employed is the same size as in No C Fencing last described ... ... per yard £0 3 1

Cast Iron Terminal Posts for ditto ... ... each £0 16 9

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HURDLES, FENCING, AND FIELD GATES
(CONTINUED).

Wrought Iron Field Gates.

No. 1. Wrought Iron Six-barred Field Gate with Two Diagonal Braces, width 9ft., height from top to bottom bar 3ft. 8in., height from ground line to top bar 4ft., top and bottom bars 1¼in. wide and ½in. thick, four other horizontal bars 1in. wide and ¼inch thick, heel bar 1in. wide and ⅜in. thick, head bar 1¼in. wide and ½in. thick, middle upright bar 1¼in. wide and $\frac{5}{16}$in. thick, diagonal braces 1⅛in. wide and ¼in. thick.

Price with Two Round Cast Iron Pillars complete, to fix to Wood or Stone Blocks	£3	10	0
Price of Gate without Pillars...	£1	10	0
Mountings for Stone or Wood Posts ... ...extra	£0	3	6

No. 2. Wrought Iron Six-barred Field Gate constructed principally of T and Angle Iron with Two Diagonal Braces—the posts are of solid wrought iron, with plate iron self-fixing bases, requiring neither wood nor stone blocks to hold them when fixed in stiff soil, well rammed ; the gate is hung to the post by two Collars or Thimbles slipped over the top of the post ; width of gate 9ft., height from ground line to top bar 4ft., top and bottom bars of T iron 1½in. wide by 1¼in. deep, heel bar 1⅝in. wide and ⅜in. thick, head bar 1½in. wide and ⅜in. thick, four horizontal bars each 1⅛in. wide and ¼in. thick, two inner upright bars 1in. wide and ⅜in. thick, two brace bars of angle iron each 1in. wide and 1in. deep, and $\frac{3}{16}$in. thick, hanging post 2¼in. diameter, catching post 1¾in. diameter ; a very strong and comparatively light gate.

Price with Self-fixing Round Hanging and Catching Posts	£3	12	6
Price without Posts...	£1	10	0
Extra for Back Stays to Hanging Post...	£0	11	6
Mountings for Wood or Stone Posts ... ...extra	£0	3	6

No. 3. Wrought Iron Six-barred Field Gate constructed principally of T and Angle Iron with Four Diagonal Braces, made for either wood or stone posts, width 9ft., height from ground line to top bar 4ft., top and bottom bars of T iron 1½in. by 1¼in., heel bar 1¾in wide and ⅜in. thick, head bar 1½in. wide and ⅜in. thick, four horizontal bars 1in. wide and ¼in. thick, one centre upright 1in. wide and ⅜in. thick, four brace bars 1in. by 1in. by $\frac{3}{16}$in. angle iron.

Price of Gate only (without posts)...	£1	10	0
Mountings for Wood or Stone Posts ... ...extra	£0	3	6

No. 4. Strong Wrought Iron Seven-barred Field Gate with Scroll Head and Heel, constructed of Flat Bars, made for either wood or stone posts, width of gate 9ft., height from ground line to top bar 4ft. 6in., top and bottom bars 1½in. wide and ⅛in. thick, five horizontal bars each 1¼in. wide and ¼in. thick, heel bar 1½in. wide and ¾in. thick, head bar 1½in. wide and ½in. thick, two inner upright bars 1¼in. wide and ⅜in. thick, one brace bar 1¼in. wide and ¼in. thick.

Price of Gate only (without posts)...	£2	0	0
Mountings for Wood or Stone Posts ... ...extra	£0	3	6

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HURDLES, FENCING, AND FIELD GATES

(CONTINUED).

Wrought Iron Field Gates (Continued).

No. 5. Wrought Iron Six-barred Trussed Gate, made with top and bottom bars of flat iron 1½in. wide and ½in. thick, four horizontal bars each ½in. diameter, heel bar 1½in. wide and ⅞in. thick, head bar 1½in. wide and ½in. thick, three inner uprights 1½in. wide and ⅜in. thick, four round truss rods $\frac{7}{16}$in. diameter, cast iron pillars 4¾in. diameter at base and 4in. diameter at top under cap.

Price with Round Cast Iron Pillars complete, to fix to Wood or Stone Blocks ...	£4	15	0
Price of Gate without Pillars...	£2	5	0
Mountings for Wood or Stone Posts ... ...extra	£0	3	6

No. 6. Wrought Iron Six-barred Gate with Scroll Head and Heel, Three Diagonal Braces and Two upright Bars, width of gate 9ft., height from ground to top bar 4ft. 4in., top and bottom bars 1½in. wide and ½in. thick, four horizontal bars each of ⅝in. diameter, heel bar 1½in. wide and ¾in. thick, head bar 1½in. wide and ½in. thick, two inner upright bars 1¼in. wide and ⅜in. thick, three braces 1½in. wide and ½in. thick, the pillars are of cast iron 4¾in. diameter at base and 4in. diameter at top under cap.

Price of Gate with Round Cast Iron Pillars complete, to fix to Wood or Stone Blocks	£4	17	6
Price of Gate without Pillars, to fix to Wood or Stone Gate Posts	£2	7	6
Mountings for Wood or Stone Posts ... ...extra	£0	3	6

No. 7. Light Wrought Iron Six-barred Gate made entirely of Flat Iron, with Two Parallel Diagonal Braces, width 9ft., height from ground line to top of Gate 4ft., top and bottom bars 1½in. wide and ½in. thick, other four horizontal bars 1⅛in. wide and ¼in. thick, diagonal braces 1⅛in. wide and ¼in. thick, two inner upright bars 1½in. wide and $\frac{5}{16}$in. thick, heel bar 2in. wide and ½in. thick, head bar 1½in. wide and ½in. thick, cast iron pillars 5in. diameter at base and 3in. diameter under cap.

Price of Gate with Two Round Cast Iron Pillars complete to fix to Wood or Stone Blocks	£3	15	6
Price of Gate without Pillars...	£1	10	0
Mountings for Wood or Stone Posts ... ...extra	£0	3	6

No. 8. Wrought Iron Six-barred Field Gate with Tubular Top and Bottom Bars, width of gate 9ft., height from ground line to top of gate 4ft., top and bottom bars of hollow tube 1¼in. diameter, centre upright 1¼in. wide and ¼in. thick, four diagonal braces 1⅛in. wide and ¼in. thick, heel bar 2in. wide by ½in. thick, head bar 1½in. wide and ½in. thick, cast pillars 5in. diameter at base and 3in. diameter under cap.

Price of Gate with Two Round Cast Iron Pillars complete, to fix to Wood or Stone Blocks	£4	12	6
Price of Gate without Pillars...	£2	5	0
Mountings for Wood or Stone Posts ... ...extra	£0	3	6

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HURDLES, FENCING, AND FIELD GATES
(CONTINUED).

Wrought Iron Field Gates (Continued).

No. 9. Strong Wrought Iron Seven-barred Field Gate, with Scroll Head and Heel, width 9ft., height from ground line to top bar 4ft. 6in., top and bottom bars 1¼in. wide and ½in. thick, other five horizontal bars 1in. wide and ¼in. thick, heel bar 1½in. wide and ⅝in. thick, head bar 1¼in. wide and ½in. thick, upright centre bar 1¼in. wide and ⅝in. thick, four diagonal braces each 1in. by ¼in., cast iron pillars 4⅝in. diameter at base and 4in. diameter under cap.

Price of Gate with Two Round Pillars complete	£4	17	6
Price of Gate without Pillars...	£2	2	6
Mountings for Wood or Stone Posts ... ...extra	£0	3	6

No. 10. Wrought Iron Six-barred Self-Closing Gate with Ornamental Scroll Head and Heel, width of gate 9ft. 6in., height from ground line to top bar 4ft., top and bottom bars 1⅜in. wide and ½in. thick, other four horizontal bars $\frac{9}{16}$in. diameter, middle upright 1½in. wide and ½in. thick, four diagonal braces 1⅜in. wide and ⅜in. thick, pillars octagonal cast iron 4½in. diameter at base and 3in. diameter under cap. The Gate is fitted with quadrant hinge which makes it self-closing, and finger-rod for opening on horseback.

Price with Cast Iron Octagonal Pillars prepared to fix on Stone Blocks	£7	7	0

Wrought Iron Self-closing Tubular Gates.

No. 11. Wrought Iron Trussed Tubular Gate with Six Bars made of Hollow Tubes, width of Gate 9ft., height from ground line to top bar 4ft., top bar of hollow tube 1¼in. diameter, lower bars of hollow tube 1in. diameter, heel bar 2in. wide and ⅛in. thick, head bar 1¾in. wide and ⅜in. thick, centre upright bar 2½in. wide and $\frac{5}{16}$in. thick, diagonal truss 1in. wide and ¼in. thick, cast iron pillars of fluted octagonal shape 5in. diameter at base and 3½in. diameter under cap. The Gate is fitted with claw hinge to make it self-closing, and finger rod for opening on horseback.

Price of Gate with Self-fixing Cast Iron Pillars complete	£6	17	
Price of Gate only, prepared for Wood or Stone Pillars	£2	17	
Mountings for Wood or Stone Posts ... ...extra	£0	3	

No. 12. Wrought Iron Self-closing Entrance Gate with Side Gate, width of large gate 10ft. height 4ft., side gate 4ft. wide and 4ft. high, all the bars are made to taper from heel to head of gates, top and bottom bars 1¾in. wide and ¾in. thick, tapering to 1⅜in. wide and ¼inch thick, heel bar 1¾in. by 1⅜in., head bar 1½in. by ⅝in., four diagonal braces each 1¾in. by ⅜in., tapering to 1½in. by ⅜in.—the intersections in the large gate are covered by two ornamental bosses and by one in the small gate—fluted cast iron pillars 5in. diameter at base and 4in. diameter under cap.

Price of Large Gate with Finger Rod and Two Pillars	£10	0	
Price of Large Gate, Side Gate, and Three Pillars	£15	15	
Price of Large Gate without Pillars, prepared to fix to Stone or Wood	£ 5	15	
Mountings for Wood or Stone Posts ... ...extra	£ 0	7	

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HURDLES, FENCING, AND FIELD GATES

(CONTINUED).

Wrought Iron Wicket Gates and Bows.

FOR CONTINUOUS FENCING.

These Gates require no latch or other fastening and yet they are quite secure against sheep, pigs, &c. They can be made to suit any kind of Iron Fence.

Wicket Gate with Flat Horizontal Bars.

To suit Continuous Fences—Nos. 1, 2, 3, or C. £2 7 6

To suit Continuous Fences—Nos. 4, & D. £2 15 0

Wrought Iron Hand or Bridle Gates.

With Horizontal Bars and Diagonal Brace.

To suit Continuous Fences—Nos. 1 & 2 ... ... £1 17 6

To suit Continuous Fences—Nos. 3 & C. £2 2 6

To suit Continuous Fences—Nos. 4 & D. £2 7 6

Step Ladder or Stile for Iron or Wire Fencing.

Step Ladder 4ft. 6in. high, with Ladder on each side of Fence.

Price... ... ... £1 19 0

Patent Field Stile.

This Stile opens to allow the person to pass, and closes again instantly—thus dispensing with the necessity of climbing, so disagreeable in the old fashioned stile.

Price... ... ... £2 10 0

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WARNER'S

HYDRAULIC RAMS,

FOR THE SUPPLY OF WATER TO FARM HOUSES, FARM BUILDINGS, &C.

Water Ram or Self-Acting Water Elevator.

This is a very simple, efficient, and durable Machine for raising a portion of a running stream of water to almost any height, or carrying it any distance, provided a fall of water can be obtained, and is also useful for supplying dwellings, farmyards, &c. It furnishes a constant and regular supply, without any care or attention. It is perfectly applicable where no more than thirty inches fall can be had, yet the greater the fall applied, the more powerful the operation of the Machine and the higher the water may be conveyed.

The relative proportions between the water raised and wasted is dependent entirely upon the relative height of the spring or source of water above the ram and the elevation to which it is required to be raised. The quantity raised varies in proportion to the height to which it is lifted and also in proportion to the distance which the water has to be conveyed, as the longer the pipe through which the water has to be forced by the machine, the greater the friction to be overcome, and the more power consumed in the operation; yet it is common to apply the ram for conveying the water distances of five hundred or a thousand yards and up elevations of one and two hundred feet. Ten feet fall from the spring or brook to the ram is abundantly sufficient for forcing up the water to any elevation under, say, one hundred and fifty feet in height above the level of the point where the ram is located, and the same ten feet fall will raise the water to a much higher point than the last-named, although in a diminished quantity, in proportion as the height is increased; more than ten feet fall is not desirable, the wear on the ram being too great.

To enable any person to calculate what fall would be sufficient to apply to the ram to raise a given supply of water, it may be safely calculated in conveying it any ordinary distance, of two hundred and fifty or three hundred yards, that about one-seventh part of the water can be raised and discharged at an elevation above the ram five-times as high as the fall which is applied to the ram; or one-fourteenth part can be raised and discharged ten times as high as the fall applied, and so in proportion as the fall or rise is varied.

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WARNER'S
HYDRAULIC RAMS
(CONTINUED).

Thus, if the ram be placed under the head or fall of five feet, of every seven gallons drawn from the spring, one gallon may be raised twenty-five feet or half-a-gallon fifty feet; or with ten feet fall applied to the machine, of every fourteen gallons drawn from the spring, one gallon may be raised to the height of one hundred feet above the machine, and so in like proportion as the fall or rise is increased or diminished.

The following particulars must be supplied to enable the Manufacturers to decide on the size of the Machine, and give an estimate of the cost:—

1st.—The number of feet of fall that can be obtained at the spring or brook to work the ram.

2nd.—The perpendicular height, from the lower part of the fall to where the water is required to be delivered.

3rd.—The distance horizontally from the spring or brook to the house or premises where the water is wanted.

4th.—If the spring or stream should be small, it is very desirable to ascertain how many gallons it flows per minute.

PRICES:—

No. 1	of suitable capacity for a spring or brook, which furnishes a Supply-pipe			1¼in. diameter	£ 4 4 0
No. 2	Ditto	ditto	ditto	2 in. diameter	£ 6 10 0
No. 3	Ditto	ditto	ditto	2½in. diameter	£13 0 0
No. 4	Ditto	ditto	ditto	3 in. diameter	£15 15 0
No. 5	Ditto	ditto	ditto	3½in. diameter	£18 18 0
No. 6	Ditto	ditto	ditto	4 in. diameter	£25 0 0

No. 1 on a fall of 6ft. 0in. will raise 12 gallons 60ft. high per hour.

Ditto on a fall of 7ft. 6in. will raise 15 gallons 60ft. high per hour and so on in proportion to fall and height.

No. 2 on a fall of 6ft. 0in. will raise 19 gallons 60ft. high per hour.

Ditto on a fall of 7ft. 6in. will raise 24 gallons 60ft. high per hour.

No. 3 on a fall of 6ft. 0in. will raise 18 gallons 120ft. high per hour.

Ditto on a fall of 8ft. 0in. will raise 60 gallons 60ft. high per hour.

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ICE MAKING MACHINES.

Improved Ice Making Machine.

To make Clear Transparent Ice in ten minutes with Freezing Crystal—or to make Ice Cream and Ice Puddings ready moulded for the table in six minutes, with ice and salt.

No. 1—Pint with Two Moulds complete	£2 10 0
No. 2—Quart with Two Moulds complete	£3 15 0
No. 3—Pint with One Plain Mould complete	£2 2 0
No. 4—Quart with One Plain Mould complete	£3 3 0
No. 5—To Frapper One Bottle of Wine	£1 1 0

Improved Ice, Cream, and Wine Freezer.

To make Clear Ice with the Freezing Crystal and to make two kinds of Ices or Ice Creams at one time, either with Ice and Salt or with the Freezing Crystal.

No. 6—Ice, Cream, and Wine Freezer with Two Fluted Moulds complete and for One Bottle...	£3 17 6
No. 7—Ice, Cream, and Wine Freezer with One Plain Mould and for Three Bottles	£5 5 0
Freezing Crystal ... ... per tin	£1 1 0

Portable Ice Box.

Painted, Grained, and Varnished. Fitted with Tap to draw off Waste Water.

Suitable for Picnics, Travelling, &c.

No. 1—1ft. 4½in. by 1ft. 0 in. by 0ft. 11in.	£1 7 0
No. 2—1ft. 5 in. by 1ft. 2½in. by 1ft. 1in.	£1 10 0

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ICE MAKING MACHINES, ETC.

(CONTINUED).

Ice Boxes or Refrigerators.

Painted, Grained, and Varnished. Fitted with Sliding Zinc Shelves.

	ft.	in.		ft.	in.		ft.	in.		
No. 11—1	6		by	1	4	by	2	1	... ...	£2 10 0
No. 12—1	10		by	1	8	by	2	5	... ...	£3 10 0
No. 13—2	3		by	1	9	by	2	4	... ...	£4 10 0
No. 14—2	9		by	1	10½	by	2	7	... ...	£5 10 0
No. 15—3	3		by	2	0	by	2	8	... ...	£6 10 0
No. 16—3	2		by	2	1½	by	2	9	... ...	£7 10 0
No. 17—4	2		by	2	3	by	2	10	... ...	£8 10 0

INDIAN CORN SHELLERS.

The "Burrall" Indian Corn Sheller

Is made entirely of iron; which is preferable to wood in very hot climates. The Machine has an improved delivery which perfectly separates the "cob" and the grain, and is equally well adapted for large or small corn. It can be packed for shipment in a very small compass.

Price... ... ... £2 0 0

The "Clinton" Indian Corn Sheller

Is constructed principally of Wood and is fitted with either one or two Fly Wheels. This Machine is preferable to the "Burrall" for shelling small and medium sizes of corn. It will shell from 10 to 15 bushels of corn per hour when worked by one man, with a boy to feed the ears into the Machine.

Price... ... ... £2 10 0

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INDIA RUBBER BELTING

Made of Cotton Canvas and India Rubber, for Driving Machinery.

2-Ply—Should only be used for light work.

3-Ply—Medium strength, equal to stout single leather.

4-Ply—Of great strength, suitable for heavy work.

5-Ply—For very heavy work.

6-Ply—Made for extra strength, and equal to the strongest double leather.

Price per Foot, with Square Edge.

Width in Inches.	2-Ply.	3-Ply.	4-Ply.	5-Ply.	6-Ply.
	s. d.	s. d.	s. d.	s. d.	s. d.
1 Inch	0 4¾	0 6	0 7	—	—
1¼ Inch	0 6½	0 8½	0 10	—	—
2 Inch	0 8¼	0 10¾	1 1	1 3¼	1 6
2½ Inch	0 10¼	1 1	1 4	1 7	1 10
3 Inch	1 0	1 3½	1 7	1 11	2 2½
3½ Inch	1 2	1 6	1 10	2 2	2 6½
4 Inch	1 4	1 8½	2 1½	2 6	2 10
4½ Inch	1 6	1 11	2 4½	2 10	3 3
5 Inch	1 8	2 1½	2 7¼	3 1	3 7
5½ Inch	1 10	2 4	2 10½	3 5	3 11
6 Inch	2 0	2 6½	3 1½	3 9	4 3
6½ Inch	2 2	2 9	3 4½	4 0	4 7
7 Inch	2 4	3 0	3 8	4 2	4 11
8 Inch	2 8	3 4	4 2	4 10	5 8
9 Inch	3 0	3 9	4 8	5 6	6 4
10 Inch	3 4	4 2	5 3	6 2	7 0
11 Inch	3 8	4 7	5 10	6 10	7 9
12 Inch	4 0	5 0	6 5	7 6	8 6
13 Inch	—	—	7 0	8 2	9 3
14 Inch	—	—	7 7	8 10	10 0
16 Inch	—	—	8 9	10 2	11 6
18 Inch	—	—	9 11	11 6	13 0

ENDLESS BELTS FOR THRESHING MACHINES.

THREE FEET EXTRA CHARGED FOR BEING MADE ENDLESS.

Usual Stock Sizes.

	s. d.	
4½ Inch by 4-Ply.....	2 4½ per Foot	..... 60ft., 65ft., and 70ft. long.
5 Inch by 4-Ply.....	2 7¼ per Foot	..... 60ft., 65ft., and 70ft. long.
5 Inch by 5-Ply.....	3 1 per Foot	..... 60ft., 65ft., and 70ft. long.
5½ Inch by 4-Ply.....	2 10½ per Foot	..... 60ft., 65ft., and 70ft. long.

Driving Bands of any other widths or ply (thickness) made to Order.

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ELASTIC STEAM ENGINE PACKING.

		s.	d.
Rope Packing Canvas with Vulcanized Rubber Core	per lb.	2	0
Ditto Ditto without Rubber Core	„	1	9
Best Canvas Packing, combined with Rubber in Rings, all sizes, for Gland Boxes ...	„	4	9
Ditto Ditto Ditto in Sheet, about 36in. wide	„	4	0
Second Quality in Rings and Washes	„	1	9
Ditto in Sheet	„	1	6
White Talc Packing	„	2	0

Self Lubricating Engine Packing.

Made of Lubricated Cotton with Elastic India-Rubber Core	per lb.	2	6

Squeegees, or Vulcanized India Rubber Brooms

For Pavements, Warehouses, Breweries, Stables, Wood Floors, &c.

No. 1.– 10½in. long per dozen (without handles)	£0	18	0
No. 2.—12 „ „ „	£1	0	0
No. 3.—13½ „ „ „	£1	4	0
No. 4.—16½ „ „ „	£1	10	0
No. 5.—24 „ „ „	£3	0	0
No. 6.—26 „ „ „	£3	12	0
No. 7.—28 „ „ „	£4	4	0
No. 8.—30 „ „ „	£4	16	0
No. 5.—24in. long per dozen, with handles and iron stays	£3	18	0
No. 6.—26 „ „ „	£4	10	0
No. 7.—28 „ „ „	£5	4	0
No. 8.—30 „ „ „	£5	16	0

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VULCANIZED SHEET INDIA RUBBER,

From 4 to 30 yards long, 36in. to 54in. wide, and of any thickness from the 50th part of an inch upwards; the gauge for thickness being the aliquot part of an inch.

		Price per lb. s.	d.
Red.	Best Quality Manufactured, $\frac{3}{16}$in. thick and upwards	5	6
	Ditto Ditto $\frac{1}{16}$in. to $\frac{3}{16}$in.	6	0
	Ditto Ditto under $\frac{1}{16}$in.	7	0
A.	Grey Colour, $\frac{1}{4}$in. thick and upwards	4	5
	Ditto $\frac{1}{16}$ to $\frac{1}{4}$in. thick	5	0
	Ditto under $\frac{1}{16}$in.	6	0
B.	Drab Colour $\frac{1}{8}$in. thick and upwards	3	6
	Ditto $\frac{1}{16}$in. to $\frac{1}{8}$in. thick	3	9
D.	Black, $\frac{1}{8}$in. thick and upwards	2	8
G.	White, $\frac{1}{8}$in. thick and upwards	2	5
	Ditto $\frac{1}{16}$in. to $\frac{1}{8}$in. thick	2	8
G. H.	Dark Drab Colour $\frac{1}{8}$in. thick and upwards	2	0
F. C.	Fibrous Rubber, for rough purposes, $\frac{1}{8}$in. thick and upwards	1	6
A.	Insertion Sheet (*i.e.* Rubber combined with Canvas) $\frac{1}{16}$to $\frac{1}{4}$in. thick	5	6
	Ditto Ditto under $\frac{1}{16}$in.	6	3
D.	Ditto Ditto $\frac{1}{8}$in. thick	3	3
	Ditto Ditto $\frac{1}{16}$in. to $\frac{1}{8}$in.	3	6
G.	Ditto Ditto $\frac{1}{8}$in. thick	3	0
	Ditto Ditto $\frac{1}{16}$in. to $\frac{1}{8}$in.	3	3
Brass Wire Gauze Insertion Sheet		9	0
Corrugated Vulcanized Rubber for Flax Machines, made 9in. wide, $\frac{1}{16}$in. thick, and upwards		4	9

WATERPROOF CARRIAGE, GIG, AND DOG-CART APRONS.

Printed Seal Skin.—Black Rubber Surface, 61in. by 48in. ...each	£0	18	6
Super Shaded Seal.—Bound Leather, Black Rubber Surface, 61in. by 48in. ...each	£1	5	0
Or with Drab Rubber Surface, 1/6 extra.			
Scotch Wool Plaids and Checks.—Black Rubber Surface, 61in. by 48in.	£1	0	0
Or with Drab Rubber Surface, 1/6 extra.			
Cashmere.—Black Rubber Surface (very light), Bound Leather, 60in. by 48in.	£0	18	6
Super Windsor.—Black Rubber Surface, Bound Leather, 62in. by 50in.	£1	11	6
All with Straps and Buckles complete.			

HORSE LOIN COVERS.

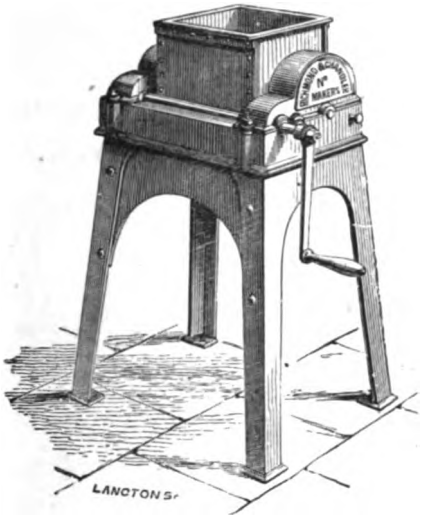
Single Texture, black surface, lined with Woollen Cloth, Straps, and Buckles, 32in. by 38in. ...each	£0	15	9
Ditto Ditto unlined Ditto ...each	£0	10	9

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RICHMOND & CHANDLER'S

PATENT KNEADING MACHINES

SUITABLE FOR BAKERS' OR DOMESTIC USE.



This is a Machine for the purpose of Kneading Dough by mechanical means. It consists of a trough, in which work in different directions four blades set at a certain angle, on revolving shafts. On the handle being turned, these blades are caused to rotate, and the ingredients to be operated upon are thereby agitated to such an extent that the mixing is accomplished with astonishing rapidity.

The above drawing represents the small size of Kneader—suitable for families. It is capable of kneading from 6 to 14lbs. of Flour, is compact and simple, not liable to get out of order, and requires very little power to work it.

Price £4 12 6

The following are a few suggestions that may be found useful in working the Machine :—

Place in the Machine 14lbs. of Dry Flour, in the centre of which pour half-a-pint of Water, in which there has been previously dissolved 2oz. of German or its equivalent in Brewers' or other Yeast ; slightly mix a little of the Flour with the aforesaid Yeast and Water, so as to form a light dough or sponge on the top of the Flour, and leave it to ferment.

If German Yeast is used, the process will require one hour, or thereabouts ; but, as in ordinary baking, the time required will be in proportion to the quantity of Yeast used.

When the sponge has been left to ferment for the specified time, take three quarts of Tepid Water, in which 2oz. of salt have been dissolved, commence to turn the handle and add the Water, when the operation will be completed in two minutes ; then place a small trough or other receptacle under the Machine, and draw the spring at the side of the frame. This will allow the box to turn completely over, and a few turns of the handle will entirely empty the Machine of its contents.

No. 2 Kneader is similar in construction to No. 1, but larger and stronger —adapted for the requirements of Large Families, Schools, Institutions, and Small Baking Establishments. Two men can knead with this Machine at the rate of 60lbs. of Flour in two minutes.

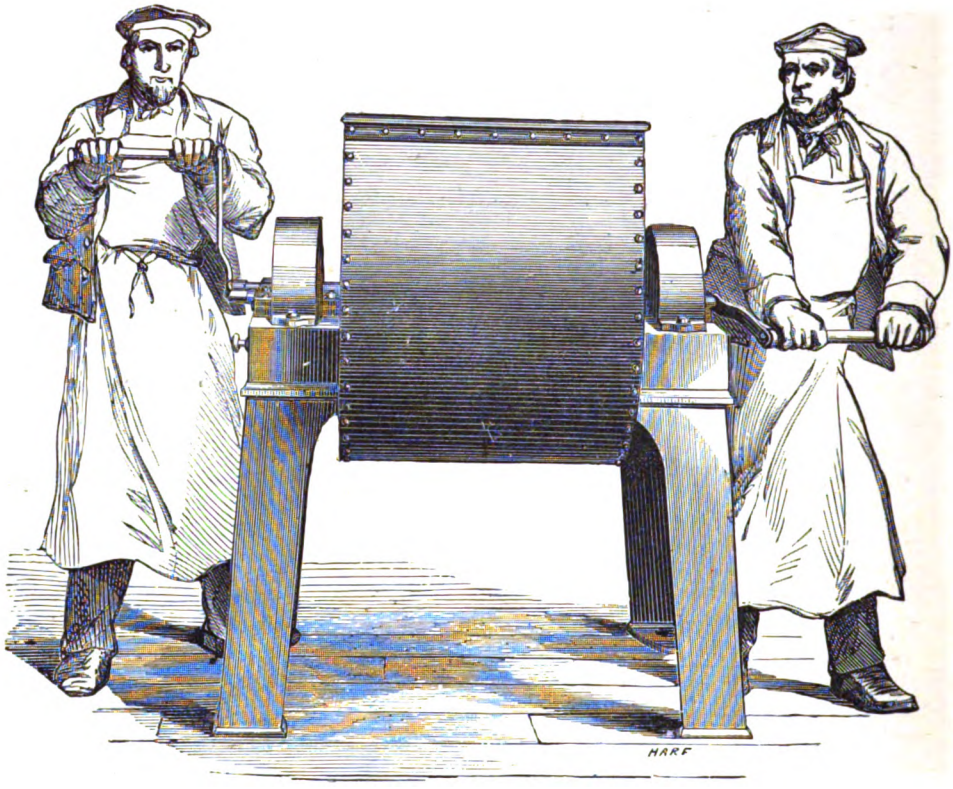
Price £13 0 0

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RICHMOND & CHANDLER'S

No. 3 PATENT KNEADER.

(EXTERNAL VIEW.)



No. 3 KNEADER

Is a still larger size Machine, capable of thoroughly mixing one sack of Flour in 8 minutes by two men,—and if worked by power, in a much shorter time. When adapted for hand-power the Machine is fitted so as to be worked at two different speeds at pleasure. The advantage of this is obvious—for when the dough becomes stiff, the handles are transferred from the fast to the slow speed—thus preventing the fatigue which would otherwise attend the completion of the operation.

Price for Hand	£23 5 0
,, for Power	£28 0 0

No baker or family should be without a machine suited to the extent of their requirements.

The advantages of Machine-made Bread are so well known, that it is hardly necessary to mention them particularly, but the following points are worthy of notice.

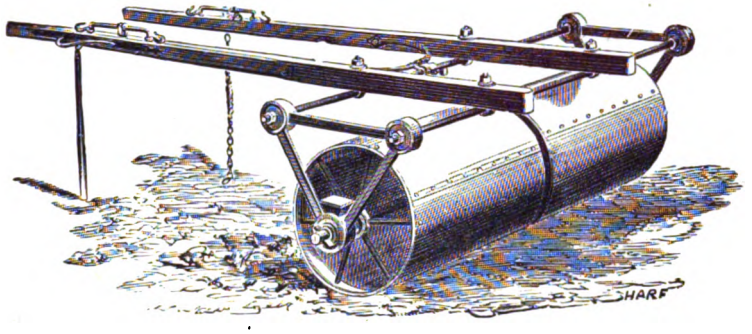
The use of the Machine prevents all contact of the hands and arms with the Dough, and thus conduces most materially to **Cleanliness.** There is also a considerable **Saving of Time** and a consequent **Diminution of Expense.**

A greater quantity of Bread is produced from a given amount of Flour than can be obtained by Hand Kneading—another important economical advantage.

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BARFORD & PERKINS'

IMPROVED UNBREAKABLE WROUGHT IRON CYLINDER LAND ROLLERS.



In these Rollers the Cylinders are made of best boiler plate iron with rivetted edges, and the frames and ends are also of wrought iron.

PRICES:—

Diameter of Cylinders.	With 2 Cylinders 6½ft. wide.	With 2 Cylinders 7ft. wide.
15 inch	£ 8 0 0	£ 8 10 0
18 inch	£ 8 10 0	£ 9 0 0
20 inch	£ 9 0 0	£10 0 0
24 inch	£10 0 0	£11 0 0
27 inch	£11 10 0	£12 10 0
30 inch	£13 0 0	£14 0 0

BARFORD & PERKINS'

IMPROVED CAST CYLINDER LAND ROLLERS,

WITH WOOD FRAMES.

Diameter of Cylinders.	With 3 Cylinders 6½ft. wide.
14 inch	£ 7 10 0
16 inch	£ 8 10 0
18 inch	£ 9 10 0
20 inch	£10 0 0
24 inch	£14 0 0
30 inch	£17 0 0
36 inch	£24 0 0

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BARFORD & PERKINS'

PATENT ADJUSTABLE WATER BALLAST WROUGHT IRON LAND ROLLERS.

(CONTINUED).

The Cylinders are of wrought iron, constructed so that they can be filled with water if desired, thus doubling the weight and crushing power without increasing the friction on the bearings.

LENGTH, 6½ FEET.	APPROXIMATE WEIGHTS.		PRICES.
Diameter.	Empty.	Full.	
18 inches	8 cwt.	14 cwt.	£14 10 0
20 inches	9 cwt.	16 cwt.	£15 10 0
24 inches	11 cwt.	22 cwt.	£17 10 0
27 inches	12 cwt.	26 cwt.	£21 0 0
30 inches	14 cwt.	30 cwt.	£25 0 0
If fitted with Scrapers	,...	... ...	...extra £ 1 0 0
If with Seat for Driver	... ...	... ...	...extra £ 1 0 0
If with double Shafts ...	... ...	... ...	...extra £ 1 0 0

N.B.—These Rollers can be made any other sizes to order.

BARFORD & PERKINS'

SINGLE CYLINDER ADJUSTABLE WATER BALLAST ROLLERS,

Fitted with Shafts for Pony or Light Horse.

Adapted for Public Grounds, Lawns, Cricket Grounds, Gravel Walks, &c., made of wrought iron, and on same principle as those previously described.

PRICES:—

APPROXIMATE WEIGHTS.

Width and Diameter.	Empty. Cwt. qr. lb.	Full. Cwt. qr. lb.	
30 by 30 inches	6 0 0	13 0 0	£14 10 0
36 by 36 inches	7 0 0	17 0 0	£18 10 0
42 by 42 inches	10 0 0	24 0 0	£25 0 0

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BARFORD & PERKINS'

PATENT SINGLE CYLINDER ADJUSTABLE WATER BALLAST HEAVY ROLLERS.

(CONTINUED.)

These Rollers are excellent for heavy work of all kinds, the crushing power being perfectly adjustable between the limits undermentioned.

PRICES:

APPROXIMATE WEIGHTS.

Size. Long.	Diameter.	Empty. Tons. cwt. qr.	Full. Tons. cwt. qr.	
4½ feet	by 4½ feet	3 5 0	5 0 0	£ 95 0 0
4½ feet	by 4 feet	2 15 0	4 10 0	£ 75 0 0
4½ feet	by 3½ feet	2 10 0	3 10 0	£ 65 0 0
4 feet	by 3½ feet	2 0 0	3 0 0	£ 55 0 0
4 feet	by 3 feet	1 10 0	2 10 0	£ 40 0 0
5½ feet	by 6½ feet	7 10 0	11 10 0	£190 0 0
5 feet	by 6 feet	6 0 0	9 0 0	£160 0 0
5 feet	by 5½ feet	5 10 0	8 0 0	£135 0 0
4½ feet	by 5½ feet	4 10 0	6 10 0	£110 0 0
4½ feet	by 5 feet	4 0 0	5 10 0	£100 0 0

If fitted with Patent Turn Table Frame, to allow the Horses to turn without turning the Implement; for each Roller ... ...extra £10 0 0

If fitted with powerful brake for hilly districts; for each Roller ... ...extra £3 10 0

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HOWARD'S FIELD ROLLERS.

These Rollers are made with strong wrought angle iron frames, extra strong cylinders and brackets, wood shafts, wrought iron spindles and lignum vitæ bearings.

The Rollers are fitted with pole instead of shafts when required.

PRICES:—

Diameter of Cylinders	12 Inches	... ...	Weight 8 Cwt.	... ... £ 9 10 0
„ „	14 „	... ...	„ 9½ „	... ... £10 10 0
„ „	16 „	... ...	„ 10½ „	... ... £11 0 0
„ „	18 „	... ...	„ 11¼ „	... ... £12 0 0
„ „	20 „	... ...	„ 12 „	... ... £13 0 0
„ „	24 „	... ...	„ 15 „	... ... £15 0 0
Double Shafts				...extra £ 1 5 0
Box to weight the Roller				...extra £ 0 15 0
Seat for Driver				...extra £ 0 10 0

CORBETT & PEEL'S

SEGMENT PATTERN LAND ROLLERS.

These Rollers are fitted with a series of rings six inches wide with flat surfaces, which work independently on the spindle and adjust themselves very readily to undulating ground. They also turn very easily at the headlands.

PRICES:—

Width. ft.	in.	14in. diam. £ s. d.	16in. diam. £ s. d.	18in. diam. £ s. d.	20in. diam. £ s. d.	22in. diam. £ s. d.	24in. diam. £ s. d.	26in. diam. £ s. d.
5 ...	6 ...	7 10 0 ...	8 10 0 ...	9 0 0 ...	10 0 0 ...	10 15 0 ...	12 10 0 ...	13 10 0
6 ...	0 ...	7 17 6 ...	9 0 0 ...	9 10 0 ...	10 10 0 ...	11 15 0 ...	13 5 0 ...	14 5 0
6 ...	6 ...	8 5 0 ...	9 10 0 ...	10 0 0 ...	11 0 0 ...	12 10 0 ...	14 0 0 ...	15 0 0
7 ...	0 ...	8 12 6 ...	10 0 0 ...	10 10 0 ...	11 10 0 ...	13 10 0 ...	14 15 0 ...	15 15 0

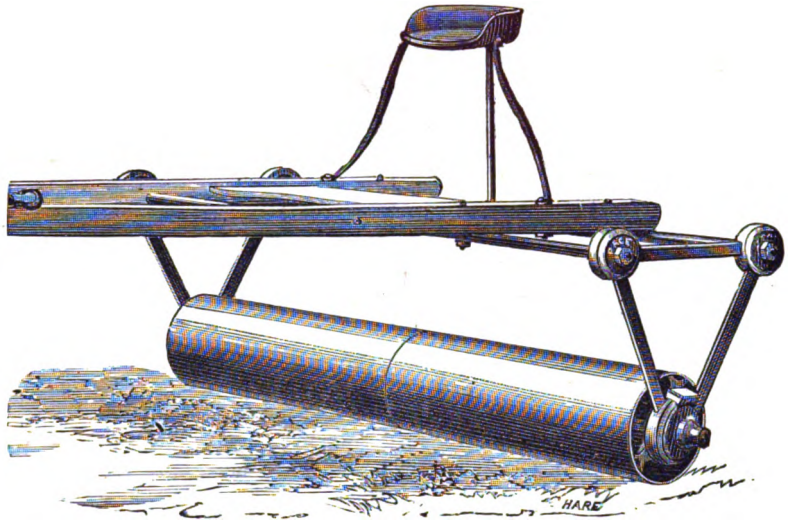
Fitted with double Shafts ... ...extra £1 5 0

Seat for Driver ... ...extra £1 0 0

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E. PAGE & Co's.

IMPROVED UNBREAKABLE WROUGHT IRON CYLINDER LAND ROLLERS.



The Cylinder Frames, and Brackets of these Rollers are of wrought iron, combining great strength with durability, so that it is almost impossible to break them.

PRICES:—

No. 1	With 2	wrought iron	Cylinders, 12in. diameter	£7	10 0
No. 2	With 3	ditto	ditto 12in. diameter	£7	15 0
No. 3	With 3	ditto	ditto 15in. diameter	£8	15 0
No. 4	With 2	ditto	ditto 18in. diameter	£9	0 0

Driver's seat, 10/ extra. Scrapers, 7/6 extra.

E. PAGE & Co.'s.

IMPROVED CAST IRON CYLINDER LAND ROLLS,

With Wrought Iron Frames and Brackets.

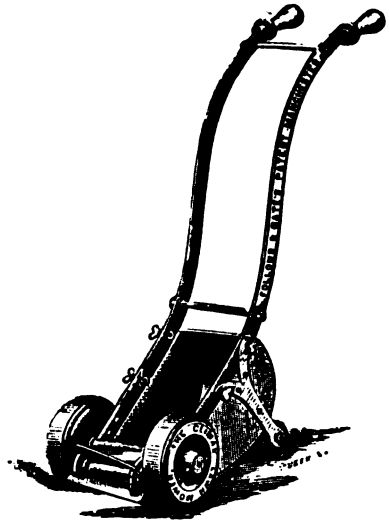
No. 1	With 2	Cast Iron	Cylinders 12in. diameter	£8	0 0
No. 2	With 3	ditto	ditto 12in. diameter	£8	5 0
No. 3	With 3	ditto	ditto 15in. diameter	£9	5 0

Driver's seat, 10/- extra. Scrapers, 7/6 extra.

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FOLLOWS & BATES'

PATENT "CLIMAX" BACK DELIVERY LAWN MOWERS.



In these Lawn Mowers the Collecting Box is placed behind the revolving Cutter, so that the Machine can be worked close up to walls, trees, or underneath shrubs without removing the box.

The revolving Cutter is propelled by a simple wheel and pinion without any intermediate gear.

When used without the box, any size will cut grass six inches long if required.

PRICES:—

6 inch	Patent Climax	Lawn Mower	... ...	£1	5	0
7 inch	Ditto	Ditto	... .	£1	15	0
8 inch	Ditto	Ditto	... ...	£2	10	0
10 inch	Ditto	Ditto	.. ..	£3	3	0

FOLLOWS & BATES'

PATENT LAWN EDGE CUTTER.

A light and handy Machine to supersede the Shears for cutting grass that over-hangs the edges of Lawns.

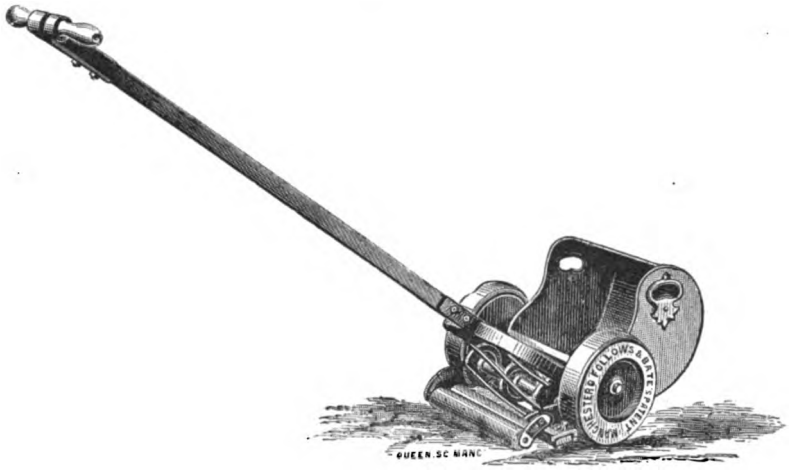
Price £2 10 0

Patent Clearing Tool for use with the above, 7/6.

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FOLLOWS & BATES'

ANGLO-AMERICAN LAWN MOWERS.



These Machines will mow the longest grass or keep the smoothest lawn in good order.

The Cutting Cylinder can be raised off the ground for travelling by simply turning the handle over, and the Machines can be then wheeled away in safety on the roughest road.

They are provided with a grass Collecting Box and Moveable Plate, so that they can be used for collecting or distributing the cuttings.

PRICES:—

8 inch.	10 inch.	12 inch.	14 inch.	16 inch.	18 inch.	20 inch.	24 inch.
£2 15 0	£3 10 0	£4 10 0	£5 10 0	£6 10 0	£7 10 0	£8 10 0	£9 10 0
Suitable for a lady.	Suitable for a lady.	Suitable for a gentleman.	Suitable for one man.	Suitable for man & lad.	Suitable for man & lad.	Suitable for two men.	Suitable for two men.

FOLLOWS & BATES'

IMPROVED PATENT ANGLO-AMERICAN PONY LAWN MOWERS.

Simple in construction, easy to work, and fitted with Tipping Arrangement. Cylinder and Driving Shaft are made of Steel.

PRICES:—

24 inch Lawn Mower, with Whippletree, complete £10 10 0
30 inch Lawn Mower, ditto ditto £15 15 0

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GREEN'S Patent

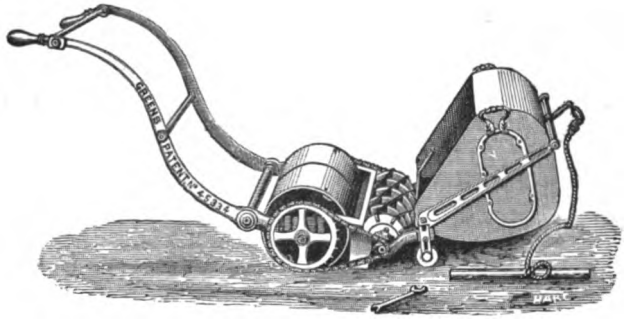
"SILENS MESSOR" NOISELESS LAWN MOWERS.

These Lawn Mowers are simple in construction, every part being easily accessible, easily worked, not liable to get out of order; they make little or no noise in working, and will cut long or short grass, either wet or dry. They mow, roll, and collect the grass.

GREEN'S

PATENT "SILENS MESSOR" LAWN MOWERS,

With Improved Solid Link Steel Chains.



SINGLE-HANDED LAWN MOWERS.

PRICES:—

6 inch	Machine,	can be worked by a lady	£1	15 0
8 inch	Ditto	ditto ditto	£2	10 0
10 inch	Ditto	can be worked by a strong youth	£3	10 0
12 inch	Ditto	can be worked by a man	£4	10 0
14 inch	Ditto	ditto ditto	£5	10 0

Packing Cases for 6, 8, and 10 inch Machines, each, 3/-.

Ditto for 12 and 14 inch Machines, each, 4/-.

The Packing Cases are recommended to be retained for keeping the Machines in when not in use, and thus avoiding damage.

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GREEN'S
PATENT DOUBLE-HANDED "SILENS MESSOR" LAWN MOWERS.

PRICES:—

16 inch	Lawn Mower,	can be worked by one man on an even lawn	... ...	£ 6 10 0
18 inch	Ditto	can be worked by a man and a boy	... ...	£ 7 10 0
20 inch	Ditto	ditto ditto	... ...	£ 8 0 0
22 inch	Ditto	ditto ditto	... ...	£ 8 10 0
24 inch	Ditto	ditto ditto	... ...	£ 9 0 0
22 inch	Ditto	suitable for a donkey		£10 0 0
24 inch	Ditto	ditto		£10 10 0

Packing Case for 16 inch Lawn Mowers, 5/-; 18 and 20 inch, 6/-; 22 and 24 inch, 7/-.

DONKEY, PONY, AND HORSE LAWN MOWERS,

Fitted with Patent Self or Side Delivery Box; with Cross Stay complete, suitable for attaching to ordinary Chaise or Trap Harness.

PRICES:—

26 inch	Lawn Mower,	can be drawn by a donkey		£14 0 0
28 inch	Ditto	ditto ditto		£16 0 0
30 inch	Ditto	can be drawn by a pony		£18 0 0
30 inch	Ditto	can be drawn by a horse...		£22 0 0
36 inch	Ditto	ditto ditto		£26 0 0
42 inch	Ditto	ditto ditto		£30 0 0
48 inch	Ditto	ditto ditto		£34 0 0
Leather Boots for Donkey, per set		... ...		£ 1 0 0
Ditto	Pony	,, ...		£ 1 4 0
Ditto	Horse	,, ...		£ 1 9 0

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GREEN'S

PATENT "MONARCH" LAWN MOWERS,

With Chain and Internal Gear Combined.

These Mowers are well adapted for cutting long, coarse, rough, and wet grass.

PRICES:—

12 inch "Monarch Lawn" Mower, can be worked by a man	...	...	...	£4 10 0
14 inch Ditto ditto ditto	...	...	...	£5 10 0
16 inch Ditto can be worked by one man on an even lawn	...			£6 10 0
18 inch Ditto can be worked by a man and boy	...	...	...	£7 10 0
20 inch Ditto ditto ditto	...	...	...	£8 0 0
22 inch Ditto ditto ditto	...	...	...	£8 10 0
24 inch Ditto ditto ditto	...	...	...	£9 0 0

Packing Cases for 12 and 14 inch Lawn Mowers, 4/- each; 16 inch, 5/- each; 18 and 20 inch, 6/- each; 22 and 24 inch, 7/- each.

In Green's Lawn Mowers the Cutters are steel on each side, so that when they become dull or blunt by running one way the Cylinder can be reversed in two or three minutes, and by bringing the edge of the Cutters against the bottom blade the Machines will cut equal to new ones.

The handles of the "Silens Messor" Machines can be raised or lowered at pleasure to suit the person using them.

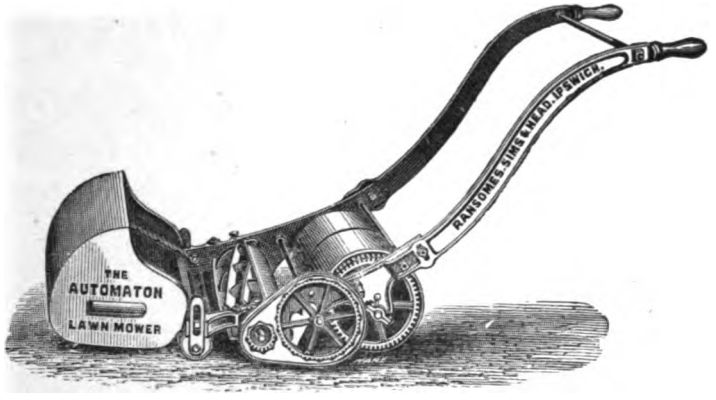
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RANSOMES, SIMS, & HEAD'S

"AUTOMATON" LAWN MOWERS.

The "Automaton" Lawn Mowers are strong, well made, and durable Machines, and well suited for general work and gardener's use. They have adjustable handles to suit the height of any person; will either deliver the cut grass into the box in front or scatter it upon the Lawn, and thus prevent the Lawn from burning in dry seasons.

These Mowers have side Rollers for cutting long grass, and front Rollers, for use in general work, which roll down worm heaps and prevent the knives being blunted. The Gearing is best machine made, the Knives of steel and iron rolled together, and the action is silent.



PRICES:—

8 inch,	for small Lawns and Edgings	£2	15	0
10 inch,	suitable for use by a boy...	£3	10	0
12 inch,	ditto ditto lad	£4	10	0
14 inch,	ditto ditto man	£5	10	0
16 inch,	ditto ditto man and boy...	£6	10	0
18 inch,	ditto ditto ditto	£7	10	0
20 inch,	ditto ditto two men or a donkey	£8	0	0
22 inch,	ditto ditto ditto ditto	£8	10	0

Boots for donkey, 20/- per set.

Arrangement for Saving Draft when Rolling is not Required.

The larger sizes, 14 inch and upwards, of the "Automaton" Lawn Mowers can be fitted when desired with Patent Combined Side Runners and Wide Rollers, which can be used alternately, according as the Lawn may or may not want rolling, and in the latter case effecting a considerable saving in draught power. Lawns require rolling, as well as cutting, at the *beginning* and *end* of the season, and then the Wide Rollers should be used. From June to September, however, Lawns do not require rolling, as worm casts do not rise and the bottom is solid, and then the Side Runners should be used, when one man can easily mow a Lawn with an 18 or 20 inch Machine, which with the rollers on would require a man and boy or two men. This arrangement will only be sent out when specially ordered, at an extra cost of 5/- a Machine.

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RANSOMES, SIMS, & HEAD'S

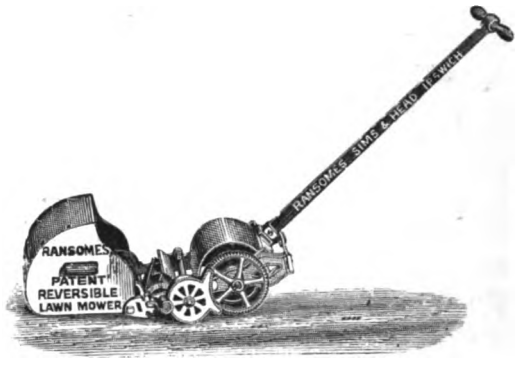
REVERSIBLE LAWN MOWERS.

The "Reversible" Lawn Mowers can be worked either side upwards, so that the action of the cutting Barrel can be reversed, and a fresh set of edges brought into use.

Rollers are fitted to the Machines which both roll and cut the grass, and it can be collected in the box or delivered behind as preferred.

The Handles can be regulated to the height of any person; the cutting Barrel runs in renewable Brass Bushes, and the Ledger Blade or Sole Plate can be adjusted to the Knives.

The Machines are fitted with both front and side Rollers.



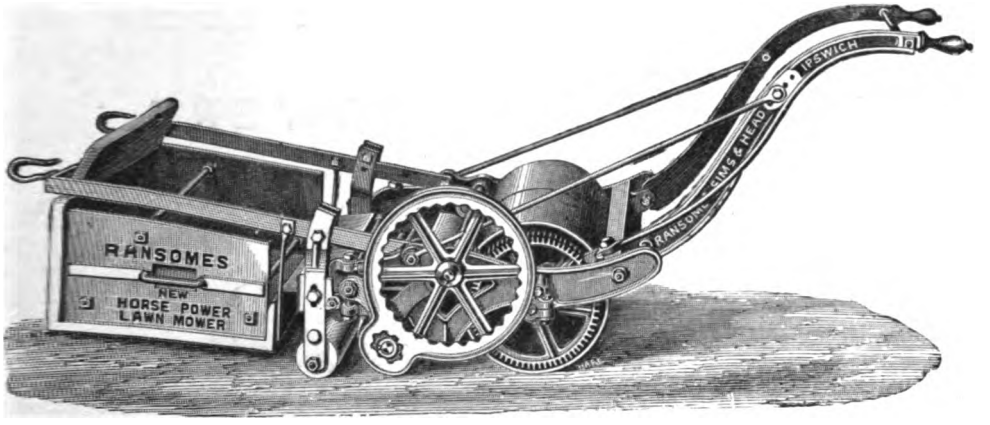
PRICES:—

6 inch Machine, with Front Rollers	£1	10	0
8 inch	Ditto	ditto	£2	0	0
10 inch	Ditto	ditto	£2	10	0

Side Rollers, which are always sent, extra, 2/-.

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RANSOMES, SIMS, & HEAD'S
HORSE POWER LAWN MOWERS.



Ransomes, Sims, and Head's Horse Power Lawn Mowers are fitted with Grass Box for delivering the grass at pleasure on either side; a strong Frame, with Adjustable Handles; a simple Knife and concave adjustment; Wind Guard, to prevent the grass blowing about in windy weather; and an Automatic Gearing, working direct on the Driving Spindle.

The Box folds over the Machine and can be stowed away in small compass.

PRICES OF PONY LAWN MOWERS:—

26 inch Pony Machine	£14	10 0
26 inch Ditto	£18	0 0
Leather Boots for Pony, per set	£ 1	5 0

PRICES OF HORSE POWER LAWN MOWERS:—

30 inch Horse Machine	£20	0 0
36 inch Ditto	£24	0 0
42 inch Ditto	£28	0 0
48 inch Ditto	£32	0 0

Complete for delivering Grass on either side of the Machine.

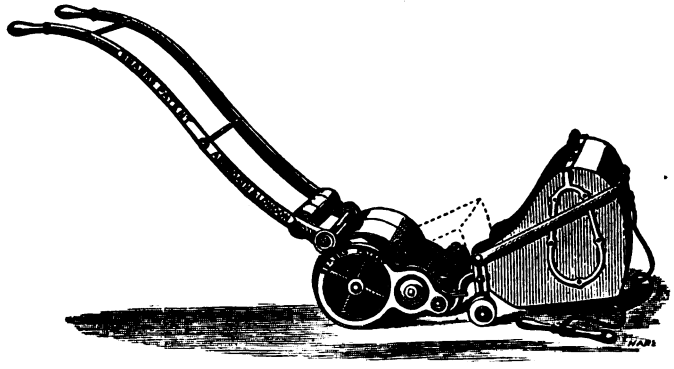
Leather Boots for Horse, per set	£1	10 0

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SHANKS'S
PATENT LAWN MOWERS.

These Lawn Mowers are fitted with Patent Double-Edged Sole-Plate, which enables the cutting parts to be reversed, and increases the durability and efficiency of the Machines.

SHANKS'S
HAND LAWN MOWERS.



Shanks's Patent Lawn Mowers will cut the grass either wet or dry ; are easily worked, silent in working, and not liable to get out of order. The bottom Sole-Plate has two edges, and the Cutter is reversible. A Wind Guard is provided. The Machines can be used either with or without the usual Front Rollers.

Directions for use are sent out with every Machine.

PRICES:—

10 inch Machine	£3	10	0	19 inch Machine	£8	0	0
12 inch Machine	£4	10	0	22 inch Machine	£8	10	0
14 inch Machine	£5	10	0	24 inch Machine	£9	0	0
16 inch Machine	£6	10	0				

The 10 and 12 inch sizes can be worked by a boy ; the 14 and 16 inch by a man ; the 19 inch by a man and a boy ; the 22 and 24 inch by two men.

SHANKS'S
PATENT LAWN MOWERS,
FOR MOWING SMALL LAWNS, &c.

These useful Machines are specially designed for mowing small Lawns, Croquet Grounds, Verges, &c. They roll the width they cut. The Cutter is reversible, and can be adjusted to the Sole-Plate ; the latter (which is single-edged) is also made adjustable for tear and wear. The various bearings are cast separate from the side of tne Machine, and when worn out can be replaced for a few pence.

These little Machines will make the Lawn as smooth as a carpet.

PRICES:—

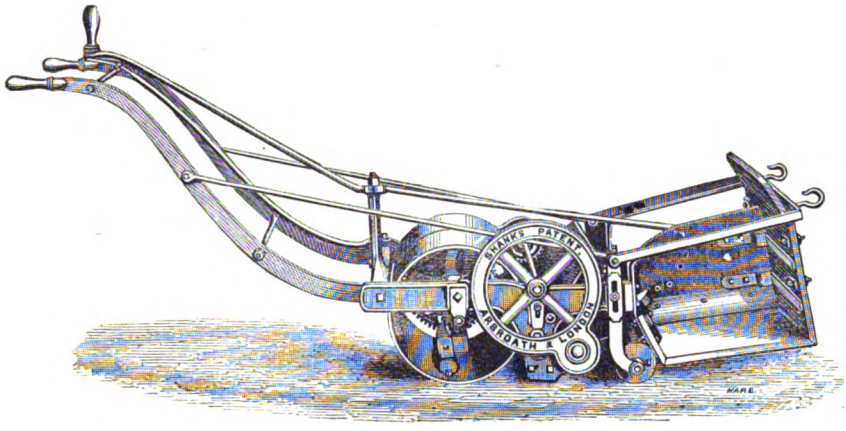
6 inch Machine	£1	5	0
7 inch Machine	£1	15	0
8 inch Machine	£2	10	0

Tool Box, extra, 6/-.

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SHANKS'S

DONKEY AND PONY LAWN MOWERS.



25 inch Lawn Mower, can be drawn by a donkey £13 10 0

Patent Delivering Apparatus, which enables the Grass Box to be emptied without stopping the Machine ... ... extra £ 1 5 0

Silent Movement ... ... extra £ 0 12 6

Boots for Donkey ... ... per set £ 1 0 0

Tool Box ... ... extra £ 0 7 6

28 inch Lawn Mower, can be drawn by a pony £15 15 0

30 inch Ditto ditto ditto £17 0 0

Patent Delivering Apparatus, which enables the Grass Box to be emptied without stopping the Machine, for 28 or 30 inch Machines... ... extra £ 1 10 0

Silent Movement ... ... extra £ 0 12 6

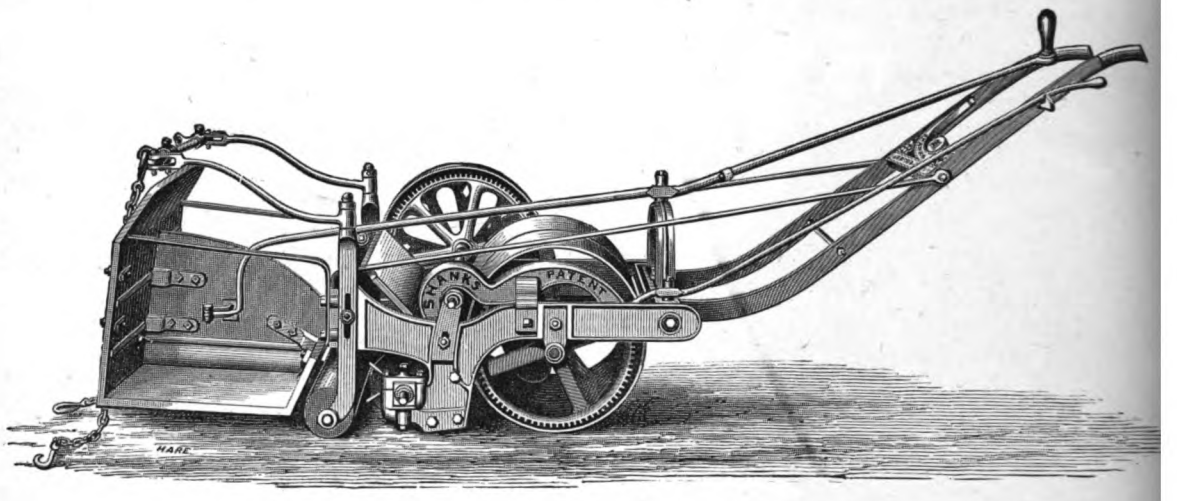
Boots for Pony ... ... per set £ 1 4 0

Tool Box ... ... extra £ 0 7 6

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SHANKS'S

HORSE POWER LAWN MOWERS.



30 inch Lawn Mower, can be drawn by a horse or strong pony	£20	10	0
Patent Delivering Apparatus, which enables the Grass Box to be emptied without stopping the Machine ... ... extra	£ 1	10	0
Silent Movement ... ... extra	£ 1	0	0
Boots for Horse's Feet ... ... per set	£ 1	9	0
36 inch Lawn Mower, can be drawn by a horse	£24	0	0
Patent Delivering Apparatus, which enables the Grass Box to be emptied without stopping the Machine ... ... extra	£ 2	0	0
Silent Movement ... ... extra	£ 1	0	0
Boots for Horse's Feet ... ... per set	£ 1	9	0
42 inch Lawn Mower, can be drawn by a horse	£28	0	0
48 inch Lawn Mower, ditto ditto	£32	0	0
Patent Delivering Apparatus, as before described, for either 42 or 48 inch Machines ... ... extra	£ 2	0	0
Silent Movement ... ... extra	£ 1	0	0
Boots for Horse's Feet ... ... per set	£ 1	9	0

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PATENT DOUBLE-LIFT SAFETY HOISTS.

These Hoists are self-sustaining; the load will not run down if the Hand Rope be let go. The lowering is affected by pulling the rope on the other side of the wheel. The Chain has two Hooks, the one ascending while the other descends, so that when the one Hook is at the top of the Lift the other is at the bottom ready for a fresh load; no time is therefore lost. One man can lift the weight.

		2½ cwt.				5 cwt.		
		£	s.	d.		£	s.	d.
Price of Hoists		3	0	0	...	7	10	0
Best Tested Chain	per foot	0	0	7	...	0	0	10
Rope	per foot	0	0	4	...	0	0	4

CHERRY'S

PATENT SAFETY HOISTS,

For Lifting Light Weights by Hand.

SPECIALLY ADAPTED FOR CORN DEALERS, MALTSTERS, WAREHOUSEMEN, &c.

These Hoists are perfectly self-sustaining; they are fitted with Patent Self-Acting Breaks, which render it impossible for the load to run down. The weight can be lowered as rapidly as required by pulling the Break Cord, or by pulling the Hand Chain in the usual way.

		5 cwt.				10 cwt.		
		£	s.	d.		£	s.	d.
Price of Hoists		7	10	0	...	12	10	0
Bright Lifting Chain	per foot	0	0	10	...	0	1	1
Bright Hand Chain	per foot	0	0	4	...	0	0	4
Rope	per foot	0	0	4	...	0	0	4

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ALBION CART OR CARRIAGE JACKS.

No. 1 Jack, with Cast Iron Body and Base Plate, and the Lever and Lift of Wrought Iron faced with Leather .. ..price £0 12 6
No. 2 Jack, a size larger than No 1, and fitted with Parallel Movement...price £0 15 0
No. 3 Jack, adapted for any sized vehicle and fitted with two Lifts... ...price £0 16 6

TRAVERSING SCREW JACKS,

With Double Ratchet Lever to Main Screw, Wrought Iron Bottom and Cylinder Case, Brass Nuts.

No.	Height when down. Inches.	Will traverse. Inches.	Diam. of Screw. Inches.	Tested to. Tons.	Price. £ s. d.
0	20	6½	2⅛	6	3 17 6
1	20	6½	2¼	8	4 0 0
2	24	9	2 5/16	10	4 10 0
3	24	12	2⅜	12	5 0 0
4	24	12	2½	15	5 10 0
5	26	14	2¾	18	8 0 0
6	27	18	3	20	9 15 0

With Double Ratchet Lever to Main Screw, Wrought Iron Bottom and Legs, Brass Nuts.

No.	Height when down. Inches.	Will traverse Inches.	Diam. of Screw. Inches.	Tested to. Tons.	Price. £ s. d.
0	20	6½	2⅛	6	4 0 0
1	20	6½	2¼	8	4 3 0
2	24	9	2 5/16	10	4 15 0
3	24	12	2⅜	12	5 5 0
4	24	12	2½	15	5 17 6
5	26	14	2¾	18	8 10 0
6	27	18	3	20	10 5 0

HALEY'S

SCREW JACKS,

With Steel Pinions and Wrought Iron Wheels, Wood or Wrought Iron Case.

No.	Height when down. Inches.	Tested to. Tons.	Price. £ s. d.
1	29	2	3 5 0
2	31	4	3 15 0
3	32	6	4 5 0
4	34	8	5 5 0
5	34	10	6 5 0
6	37	12	7 0 0
7	39	16	10 10 0
8	40	20	14 10 0

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TRIPOD AND BOTTLE JACKS.

No.	Tripod Jacks, with Brass Nuts. Price. £ s. d.	Height when down. Inches.	Diam. of Screw. Inches.	Tested to. Tons.	Bottle Jacks, with Wrought Iron Case and Brass Nuts. Price. £ s. d.
1	1 0 0	9	1½	2	0 19 0
2	1 2 0	12	1⅝	3	1 1 0
3	1 6 0	15	1¾	4	1 5 0
4	1 13 0	18	2	5	1 9 0
5	2 0 0	21	2⅛	6	1 15 6
6	2 5 0	24	2¼	8	2 3 0
7	2 15 0	27	2⅜	10	2 10 0
8	3 5 0	30	2½	12	3 0 0
9	3 15 0	33	2⅝	14	3 7 6
10	4 5 0	36	2¾	16	4 0 0
11	5 15 0	42	3	18	5 15 0
12	7 0 0	48	3¼	20	7 0 0

WINDLASS SCREW JACKS,

With Wrought Iron Case, Hardened Pinion.

SINGLE PURCHASE.

No.	Height when down. Inches.	Tested to. Tons.	Price. £ s. d.
1	30	3	4 0 0
2	30	5	4 7 6
3	31	7	4 15 0
4	32	8	5 5 0
5	33	10	6 0 0

DOUBLE PURCHASE.

1	31	8	6 5 0
2	32	10	8 0 0
3	33	12	9 10 0

CAPE WAGON JACKS,

WITH LEVER.

With Cast Iron Frame. Price. £ s. d.	No.	Height when down. Inches.	Tested to. Tons.	With Wood Block. Price. £ s. d.
0 10 6	1	12	1½	0 11 6
0 14 0	2	15	2	0 15 0
0 18 0	3	18	3	0 19 0
0 19 0	4	18	4	1 0 0
1 2 0	5	21	5	1 3 0

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RACK AND PINION JACKS,

With Wrought Iron Wheels and Case Hardened Pinions.

No.		Height when down. Inches.	Tested to. Tons.		Price. £ s. d.
0	Single Purchase	30	2		5 2 0
1	Double Purchase	30	4		6 10 0
2	„ „	30	6		8 0 0
3	„ „	32	8		8 10 0
4	„ „	34	10		10 0 0
5	„ „	36	15	With Steel Rack	14 0 0
6	„ „	38	20	Pinions	20 0 0

With Best Malleable Cast Iron Gearing.

SINGLE PURCHASE.

No.	Height when down. Inches.	Tested to. Tons.	Price. £ s. d.
1	32	2	3 10 0
2	36	3	4 0 0

BOTTLE JACKS,

With Cast Iron Frame.

No.	Height when down. Inches.	Tested to. Tons.	Price. £ s. d.
1	12	1½	0 10 0
2	15	2	0 13 0
3	18	3	0 15 0
4	18	4	0 16 0
5	21	5	0 17 0
6	24	6	1 0 0
7	24	8	1 4 0
8	24	10	1 10 0

TRIPOD WINDLASS SCREW JACKS,

With Wrought Iron Frame and Wrought Iron Case Hardened Pinion.

No.	Height when down. Inches.	Tested to. Tons.	Price. £ s. d.
1	32	5	5 0 0
2	33	7	6 0 0

RATCHET SCREW JACKS,

With Double Ratchet Lever, Wrought Iron Cylinder Case, and Brass Nut.

No.	Height when down. Inches.	Tested to. Tons.	Price. £ s. d.
1	20	6	2 8 0
2	22	8	2 15 0
3	24	10	3 5 0
4	26	12	3 15 0
5	28	16	4 5 0
6	26	20	5 10 0
7	24	30	7 0 0

EARLSTOWN JACKS,

All Wrought Iron, with Double Ratchet Lever.

No.	Height when down. Inches.	Will lift Tons.	Weight. lbs.	Price. £ s. d.
1	29	2	46	4 5 0

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PATENT HYDRAULIC LIFTING JACKS.

Height. Inches.	Run out. Inches.	Tested to. Tons.	Weight. lbs.	Price. £ s. d.
19	6	2½	34	4 0 0
23	10	4	57	5 0 0
24	10	6	68	6 0 0
26	11	8	76	7 0 0
27	12	10	86	8 0 0
27	12	12	96	9 0 0
28	12	15	104	10 10 0
28	12	20	132	12 10 0
29	12	30	174	17 0 0
29	11	40	206	20 0 0
29	11	50	264	22 0 0
29	10	60	364	25 0 0

Traversing Jacks, £3 to £5 extra.

PATENT COPPER ROPE LIGHTNING CONDUCTORS,

With Plain Point and all Fastenings Complete.

⅜ inch Diameter	per foot	£0	1	0
½ inch „	per foot	£0	1	6
⅝ inch „	per foot	£0	2	0

SOLID COPPER RIBBON LIGHTNING CONDUCTORS,

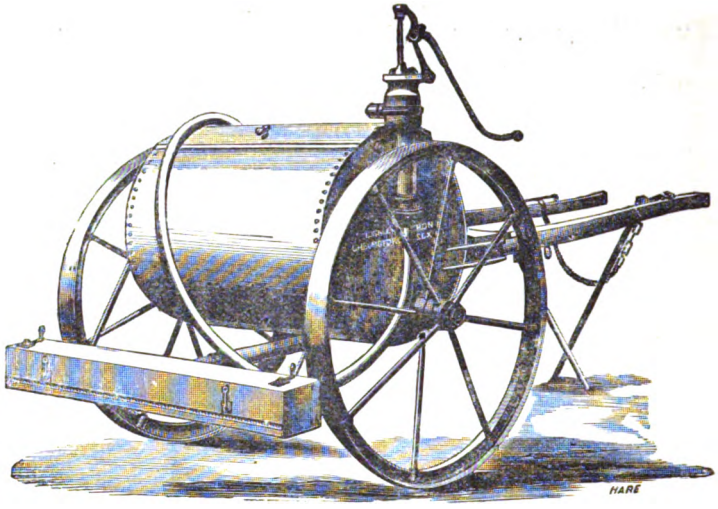
In Continuous Lengths, Ready for Fixing.

⅝ inch by $\frac{1}{16}$ inch	per foot	£0	1	0
¾ inch by ⅛ inch	per foot	£0	1	6
1 inch by ⅛ inch	per foot	£0	2	0
1½ inch by ⅛ inch	per foot	£0	2	9

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COLEMAN & MORTON'S

LIQUID MANURE CART.



The body of the Cart is of Wrought Iron, with strong Cast Ends, and is mounted on broad Iron Wheels with Wrought Iron Spokes and Axles.

The Pump is of superior make, and has Gun Metal Valves and Seatings.

The Cart is provided with an Improved Distributor, through which the Liquid Manure passes freely. The Distributor can be readily removed when the Cart is required simply as a Water Cart.

PRICES:—

		£	s.	d.
No. 1.	Pony Cart, to hold 80 Gallons	11	10	0
	Portable Pump for ditto, 2½ inch bore	2	5	0
No. 2.	Small Size, to hold 100 Gallons	13	0	0
	Portable Pump for ditto, 3 inch bore	2	15	0
No. 3.	Medium Size, to hold 150 Gallons	15	0	0
No. 4.	Large Size, to hold 190 Gallons	16	0	0
	Portable Pump for ditto, 4 inch bore	3	15	0
Extras.	India Rubber Suction Hose, per foot	2/6 to		3 0
	Liquid Manure Distributor	1	16	0
	Iron Spreader for Water	2	0	0
	Wood Wheels instead of Iron	2	0	0

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CROSSKILL'S

IMPROVED IRON CART FOR LIQUID MANURE.

The Body of this Cart is rectangular, made of cast iron plates, securely cemented and bolted together for holding water or liquid manure, and fitted with a simple brass outlet valve and lever, so arranged that a man can open and shut it as he walks by the side of the horse. This Cart is extensively used by Agriculturists for distributing liquid manure and water, by means of a spread-board, 6ft. long, which is fixed to the back of the Cart.

PRICES:—

Small Size, holding 120 gallons £20 10 0

If with Portable Pump and Hose Pipe, £5 extra.

Large Size, holding 200 gallons £26 10 0

If with Portable Pump and Hose Pipe, £6 10s. extra.

Large Taps are also fitted to these Carts, when required for water only.

BAMFORD'S

LIQUID MANURE CART

Is rectangular in shape, and of simple construction. The Pump has a four inch Galvanized Working Barrel, and is fixed inside the body of the Cart. It is easily worked by a lever fixed at the side of the driver's seat, which can be reversed so as to place it within reach of a lad by the side of the Cart.

No. 1. To hold 120 Gallons, price complete, including Pump, 12 feet of India Rubber Suction Pipe, Clip, Strainer, and Liquid Manure Distributor £17 10 0

No. 2. To hold 200 Gallons, price complete, including Pump, 12 feet of India Rubber Suction Pipe, Clip, Strainer, and Liquid Manure Distributor £22 0 0

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BAKER'S

LIQUID MANURE CART.

The body of this Cart is made of Wrought Iron and the ends of Cast Iron, well-balanced on the Axle, which is fitted under the centre, and mounted on Wood Wheels.

Valves are used instead of Taps to prevent damage by frost.

No. 1.	Containing	180	gallons,	3½	inch	Wood Wheels	...	...	...	...	...	£16	17 6
No. 2.	,,	180	,,	4	,,	Ditto	...	...	...	...	...	£17	2 6
No. 3.	,,	180	,,	4½	,,	Ditto	...	...	...	...	...	£17	12 6
No. 4.	,,	180	,,	5	,,	Ditto	...	...	...	...	...	£18	2 6
No. 5.	,,	225	,,	4	,,	Ditto	extra strong		...	..		£20	0 0
No. 19.	,,	130	,,	3	,,	Cast Iron Wheels	...	...	...	...		£12	0 0
No. 20.	,,	130	,,	3	,,	Wood Wheels	...	...	...	...	...	£13	18 0
No. 21.	,,	130	,,	3½	,,	Ditto	...	...	...	...	...	£14	0 0
No. 22.	,,	130	,,	4	,,	Ditto	...	...	...	...	...	£14	5 0
No. 23.	,,	130	,,	on Superior Wrought Iron Wheels						...	...	£14	10 0
Extras.	Improved Liquid Manure Distributor						...	...	...	...	...	£ 1	17 6
	Pump, with Brass Screwed Tail Piece						...	...	...	...	...	£ 2	15 0
	India Rubber Suction Hose						...	...	...	...	per foot	£ 0	2 6

JAMES & SON'S

LIQUID MANURE CARTS.

These Carts are made preferably of wood, being about half the weight of Iron Carts and not liable to rust or corrosion.

The liquid is forced through the Distributor in a copious shower about 15 feet wide.

Size.		Weight of Cart. Cwt.		Weight of Water about. Cwt.		Width of Tire. Inches.		Price. £	s.	d.
260 Gallons,	for working by one horse ...	8½	...	22	...	4	...	21	0	0
200 ,,	,, ,, ,, ...	6½	...	16	...	4	...	18	18	0
160 ,,	for horse 14 or 15 hands ...	6	...	12	...	3	...	15	15	0
100 ,,	for pony 13 hands high... ...	4	...	8	...	3	...	12	12	0
70 ,,	for pony 12 hands high... ..	3	...	5	...	2	...	9	9	0
40 ,,	for working by a man	2	...	3	...	2	...	7	7	0

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REEVE'S

PATENT LIQUID MANURE DISTRIBUTOR.

Awarded the First Prize of £10 at the Royal Agricultural Society of England's Show at Plymouth, 1865; and First Prize of £10 at the Royal Agricultural Society of England's Show at Bedford, 1874.

This Machine is made on the same principle as the Liquid Manure Drill; the Manure is delivered by means of Cups or Dippers cast on the Cylinder, which keep it well stirred and mixed.

Thick Liquid Manure from tanks, piggeries, &c., can be perfectly distributed without choking.

The body of the Machine holds about 100 gallons; the liquid is spread a width of six feet; the spread of the Wheels is also six feet, so that they return in the previous wheel track.

Price, with Wheels fitted with 3 inch Tires £21 0 0

AFFLECK'S

LIQUID MANURE CART.

This Cart has a wrought iron body holding 150 Gallons, and is fitted with Liquid Manure Distributor and Patent Delivery Valve. Has Wood Wheels with 4 inch Tires.

Price £20 0 0

Pump and 10 feet of Suction Hose, extra, £5.

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DOUGLAS'S

PATENT PORTABLE LIQUID MANURE PUMP,

With Brass Cylinder and Boxes, Mounted on a Wrought Iron Tripod Stand, and Fitted with Improved Valves for Liquid Manure.

The Legs of the Tripod Stand fold up, rendering the Pump very convenient for removal.

Price of Pump, 4in. Bore, with Brass Unions for 2in. Suction Hose, without Hose... ... ... £5 0 0

BAMFORD'S

PATENT CHAIN PUMPS FOR LIQUID MANURE.

The Chains of these Pumps are provided with Patent Chilled Discs, which materially increase their durability.

PRICES:—

	Diameter of Barrel.	Height under Spout.	Revolutions per minute.	Approximate Number of Gallons per hour.	Power required to lift 12 feet.	Price.	Extra per foot in length.
	Inches.	Feet.					s. d.
No. 1 Chain Pump	2	12	60	800	1 boy	£3 10 0	3 6
Ditto	2½	12	60	1500	1 ,,	£3 15 0	3 9
Ditto	3	12	60	2500	1 ,,	£4 0 0	4 0
Ditto	3½	12	60	5000	1 man	£5 0 0	5 0

Brass Bushes and extra strong Shaft for 3″ and 3½″ Pumps £0 17 6

Horse Gear, suitable for 3″ and 3½″ Pumps £7 5 0

Cast Iron Covers to prevent splashing ... ... extra £0 10 6

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HAYWARD TYLER, & CO.'S

IRON LIQUID MANURE PUMPS,

EXTRA STRONG MAKE.

	Painted. £ s. d.	Galvanized. £ s. d.	Extra Suction Pipe per Foot. s. d.
3 inch Barrel	2 13 0	3 5 0	2 9
4 inch ,,	3 3 0	3 12 0	3 0
5 inch ,,	3 12 6	4 2 0	3 6
6 inch ,,	4 7 6	4 18 6	4 0
7 inch ,,	5 8 0	6 2 6	4 6

GALVANIZED IRON LIQUID MANURE PUMP,

On Tripod Legs, with Union for Hose.

4½ inch Barrel	£2	18	6
If with 15 feet of 2¼ India Rubber Suction Hose, and Copper Rose	£5	0	0
If with strong Copper Barrel extra	£0	17	6

IMPROVED PORTABLE GALVANIZED IRON LIQUID MANURE FORCE PUMP,

On Tripod Legs, of strong construction, with Brass Union, &c.

Price of Pump, without Hose	£4	0	0

PATENT CALIFORNIA HAND PUMPS ON PLANKS.

These Pumps are double-acting, and the Valves and Air Vessels are arranged so that they can be easily reached; no red lead or packing is required for the joints; the Barrel is always primed after being once worked. The Pumps are worked by one or two handles, removable at pleasure.

2½ inch Pump to raise and force	360 Gallons per hour	£ 4	8	0
3 inch ditto ditto	600 ,, ,,	£ 5	10	0
4 inch ditto ditto	1020 ,, ,,	£ 7	0	0
5 inch ditto ditto	1620 ,, ,,	£ 8	15	0
6 inch ditto ditto	2400 ,, ,,	£13	10	0

Extra Handle, 5/-.

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RICHMOND & CHANDLER'S

LITTER CUTTER.

This Machine is for cutting up Straw into long lengths for stable bedding, by which a great saving is effected, as the foul parts can be removed and fresh litter put down without waste, which is impossible when long uncut straw is used. Moreover, cut straw absorbs moisture more quickly. and hence is sooner converted in to a valuable manure.

The following excellent description of the Machine is taken from the "Report on the Trial of Implements at Oxford," by JOHN COLEMAN, Esq., (see *Journal of the Royal Agricultural Society of England*, Vol. VI, Part II, No. XII, page 530 :)—

"Messrs. Richmond and Chandler's Litter Cutter for hand-power is a capital Machine on account of its simplicity and the quantity of stuff that can be cut with moderate draught. At first sight it may seem absurd to do such work by hand; but an inspection of the tool will show that, though only a small affair and cheap, it is quite up to its work. The Fly-wheel carries one large Blade. When the Knife is at work the Feed Rollers are stationary, hence no loss of power, which would be the case if the Rollers, in rapid motion, were forcing the straw against the Blade,—neither could an even length of litter be cut. This important condition is secured by intermittent spaces in the Gearing of the Pinion and Wheel. Exactly as the Knife enters the cut, the plain surface of the Driving Pinion comes in contact with a plain surface on the Wheel of the Roller, consequently the latter ceases to move until contact of the Teeth ensues, by which time the Knife has passed the Box."

Machine to cut one length only, either 3, 4½, or 6 inches ... ... Price £6 5 0

Machine to cut two lengths, 3 and 6 inches. In this Machine the change of length is effected by a simple arrangement for removing one Knife. On re-fixing no adjustment is required.

Price £6 15 0

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AVELING & PORTER'S

ROAD LOCOMOTIVE WAGONS.

These Wagons are constructed to carry Coals, Minerals, or Agricultural produce. They are simply and strongly built, and the Couplings are so arranged that a train will turn any curve, however sharp, each Wagon following in the track of the preceding one.

They are made with Wrought Iron Wheels, fitted with patent Oil Boxes, and with Sides or Ends to let down as preferred.

Four-wheeled Wagon, to carry 4 Tons, with Spring Draw Bar £60 0 0
Four-wheeled Wagon, to carry 6 Tons, with Spring Draw Bar £70 0 0
Springs fitted to the above, £10; Powerful Screw Friction Brake, £3.

JOHN FOWLER & CO.'S

TRACTION WAGONS.

These Wagons are of great strength, and constructed throughout on the same principle as Railway Wagons; the Wheels are made of Wrought Iron or Wood.

They are fitted with Springs and an efficient Brake when required.

The Sides or Ends are made to let down as required. The Couplings are so arranged that the Wagons will follow a Locomotive round any curve.

Four-wheeled Wagon, to carry 4 Tons £60 0 0
Four-wheeled Wagon, to carry 6 Tons £70 0 0
Springs fitted to the above, £10; Powerful Screw Friction Brake, £3.

HOWARD'S

TRACTION WAGON.

This Wagon is mounted on Springs and Wrought Iron Wheels, fitted with a Screw Brake for going down hill, and is strongly built.

Four-wheeled Wagon, with Wooden Body, to carry 4 Tons £65 0 0
Four-wheeled Wagon, with Iron Body, to carry 4 Tons £75 0 0

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BURRELL'S

ROAD LOCOMOTIVE WAGONS.

These Wagons are strongly built and are specially constructed for use with Road Locomotives and Traction Engines to carry Agricultural Produce, Coal, or Minerals.

The Couplings are arranged so as to throw no strain on the bodies of the Waggons.

Four-wheeled	5 Ton	Wagon, on Springs	... ...	£70 0 0
Ditto	6 Ton	ditto	... ...	£75 0 0
Ditto	8 Ton	ditto	... ...	£85 0 0
Ditto	5 Ton	without Springs	... ...	£60 0 0
Ditto	6 Ton	ditto	... ...	£65 0 0
Ditto	8 Ton	ditto	... ...	£75 0 0

Powerful Screw Friction Brake, extra, £3.

CLAYTON & SHUTTLEWORTH'S

ROAD LOCOMOTIVE WAGONS.

These Wagons are constructed to carry Four and Six Tons and are fitted with efficient Brakes to the hind Wheels.

Four-wheeled	4 Ton	Wagon, without Springs	... ...	£60 0 0
Ditto	6 Ton	ditto	... ...	£70 0 0
Ditto	4 Ton	with Springs...	... ...	£70 0 0
Ditto	6 Ton	ditto	... ...	£80 0 0

Powerful Screw Friction Brake, extra, £3.

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SAVAGE'S

PATENT AGRICULTURAL LOCOMOTIVES.

These Engines are fitted with Spur Gear, and fast and slow Travelling Motions.

The Boilers are made of best material and well stayed to stand a working pressure of 150 lb. per square inch. The Fire-box is of Lowmoor Iron. All wearing parts are case hardened, and every Engine is supplied with an efficient Brake, Governors, Reversing Link Motion, Pair of Signal Lamps, Waterproof Cover, &c.

6-Horse Power, Single Cylinder Engine	£340	0	0
8-Horse Power, Ditto Ditto	£400	0	0
10-Horse Power, Ditto Ditto	£460	0	0
Steam Lifting Gear ... ... extra	£ 20	0	0
Steam Water Lift ... ... extra	£ 10	0	0

SAVAGE'S

PLOUGHING ENGINE.

In this Engine the Wire Ropes are wound upon the hind Travelling Wheels, which are raised off the ground by backing the Engine up wedge shaped pieces of wood and then blocking it up so as to keep the Wheels clear of the ground.

The Wire Ropes are led off the hind Travelling Wheels, one to the front and one to the back of the Engine, so that there is no necessity for double snatch blocks when steam cultivating.

The Engine is adapted for ploughing on the roundabout system, hauling on public roads, threshing, &c.

10-Horse Power Engine, fitted with Spur Gear and Water Lifter to fill Tender	£610	0	0

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BURRELL'S

AGRICULTURAL LOCOMOTIVES,

WITH SPUR GEARING.

These Engines are very strong and light, being made almost entirely of Wrought Iron; all Gearing liable to breakage is of Steel or Malleable Iron.

They are fitted with two speeds for travelling, and either speed can be thrown out of Gear immediately by means of a single Lever.

They are enabled to turn the sharpest curves by means of Compensating or Differential Gear, and are provided with a powerful Screw Friction Brake.

PRICES:—

6-Horse Power, Single Cylinder Engine	£340	0	0
8-Horse Power, Ditto Ditto	£400	0	0
10-Horse Power, Ditto Ditto	£460	0	0

Patent Winding Drum and Compensating Gear combined, extra, £20.

The Winding Drum can be used for a variety of purposes, such as hauling a Threshing Machine out of a yard too soft to bear the weight of the Engine.

CLAYTON & SHUTTLEWORTH'S

PATENT ROAD LOCOMOTIVE ENGINES.

These Engines are strong, fitted with two speeds, and easily steered. The Driving Wheels have great width and both of them are always in Gear. The Tenders have large storage capacity.

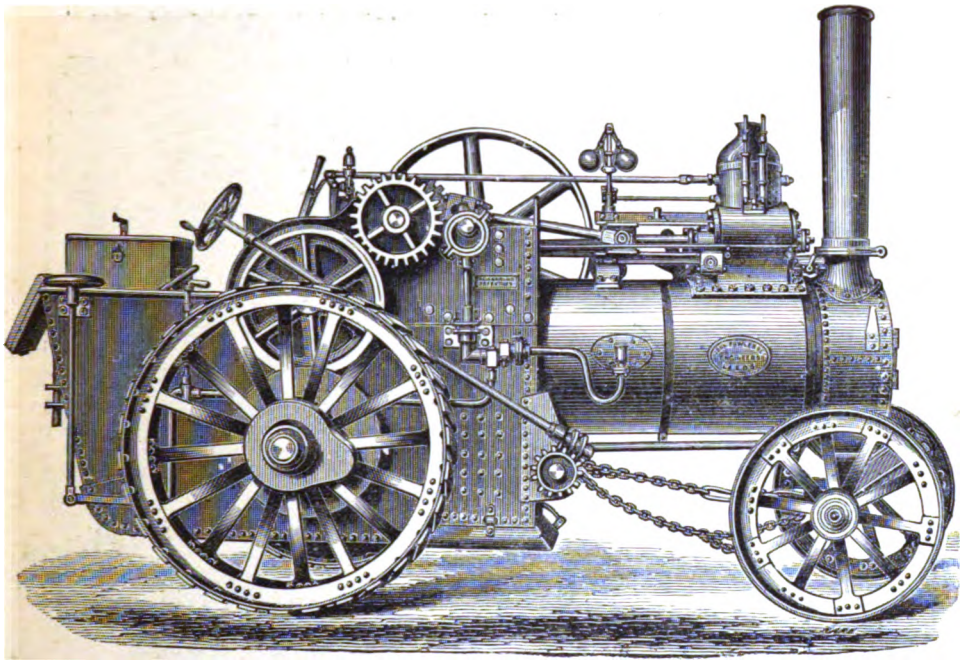
6-Horse Power, Single Cylinder Engine	£340	0	0
8-Horse Power, Ditto Ditto	£400	0	0
10-Horse Power, Ditto Ditto	£460	0	0
10-Horse Power, Double Cylinder Engine...	£505	0	0
12-Horse Power, Ditto Ditto	£585	0	0
14-Horse Power, Ditto Ditto	£655	0	0

Steam Water Lift for filling the Tender from wayside ponds or ditches, with 21 feet of Suction Hose, £10.

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FOWLER'S

PATENT AGRICULTURAL LOCOMOTIVE.



In Fowler's Agricultural Locomotives, the Boilers are of improved type, and stayed to support a working pressure of 150 lbs. per square inch. The Grate and Heating Surface are of more than ordinary size so as to allow a slow combustion of fuel, which effects a great saving of coal and of wear and tear of the boiler. The Cylinder is surrounded by a steam jacket and dome combined, to prevent priming.

It is found from experience that Single Cylinders are best suited to this class of Engine, and they are most economical in wear and tear, friction, and fuel.

Each Engine is fitted throughout with **Best Cast Steel Gearing**, and is provided with a Fly-wheel, from which any kind of machinery can be driven by a Belt, efficient Governors, powerful Brake, two speeds, Wrought Iron Wheels, and Differential Gear; a complete set of Spanners, Screw Wrench, Firing Tools, Tube-brush and Rod, Tool Box, Oil Feeder, spare Gauge Glasses and Fusible Plugs, Governor Belt, Tin Funnel, Two Lamps, a complete set of Spuds or Paddles, and Waterproof Cover are supplied free of charge.

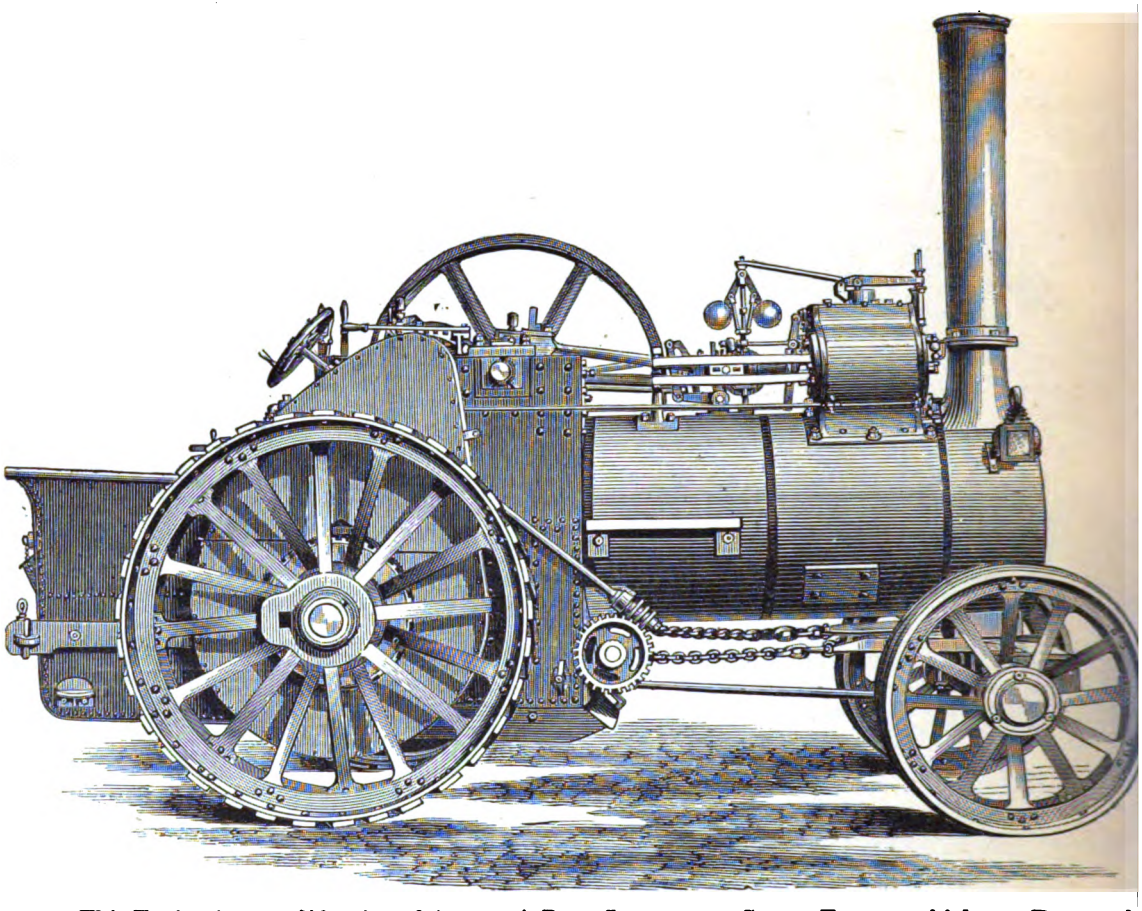
	6-Horse Power Nominal. £ s. d.	8-Horse Power Nominal. £ s. d.
Price, *Greig & Aveling's Patent*	340 0 0	400 0 0
Fire Box, to burn Wood... ... ...extra	10 0 0	10 0 0
Water Lift and 26 feet of India Rubber Hose ... ,,	10 0 0	10 0 0
Injector .. .. ,,	10 0 0	10 0 0
Additional Tank ... ... ,,	17 10 0	20 0 0
Patent Winding Forward Drum, and 50 yds. of Rope ,,	20 0 0	20 0 0

Awnings, for hot climates, can be fitted at a cost varying from £10 to £20, according to size and kind.

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AVELING & PORTER'S
NEW AGRICULTURAL LOCOMOTIVE STEAM ENGINE,

Patented by AVELING & GREIG, November 13th, 1878.



This Engine is a modification of AVELING'S ROAD LOCOMOTIVE STEAM ENGINE, which was Patented January 15th, 1878, and obtained the Highest Prize at the Paris Exhibition.

Hitherto it has been the practice to place the Gearing of the Crank Shaft and Counter Shafts overend between the Fire-box and the Driving Wheels, which practice made it necessary that the Driving Wheels should be fixed at a great distance from the axle bearing: broken driving axles and engines too wide for ordinary gateways being the result.

In Messrs. AVELING AND PORTER'S new Engines, one of the chief features is the arrangement by which the Crank Shaft and Counter Shaft Gearing is mounted on Shafts **between bearings, and not on the overhanging ends of Shafts outside bearings.** Every one acquainted with the working of Gearing subject to heavy strains will know how to appreciate this improvement. The bearings are more fairly worn, and, what is of more importance, the Gearing is maintained rigidly in truth. Another important gain in this arrangement, is, that at the same time small Pinions and large Spur Wheels are alike dispensed with, the employment of an intermediate Counter Shaft securing the reduction of speed between the Crank Shaft and the Driving Wheels, without resorting to large differences between the diameters of wheels. The arrangement, though very simple, has taken a long time to arrive at, and could not even now be advantageously employed without Mr. Aveling's patent system of forming the Brackets by carrying up the outside Fire-box plates.

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AVELING & PORTER'S

NEW AGRICULTURAL LOCOMOTIVE STEAM ENGINE,

(CONTINUED.)

These Brackets are extended upwards and backwards in one piece, so as not only to carry the Crank Shaft, but to provide Bearings also for the Counter Shaft and Driving Axle, in the most convenient position. This arrangement produces a combination of much strength and lightness, reduces to a minimum the loss and annoyance from leakage at strained bolt holes, and unites all parts peculiarly exposed to injury by jarring, with such firmness, as to give almost absolute security against such injury on even very rough roads.

The Gearing is all of **Crucible Steel,** and all the teeth are shrouded. The Castings carrying the bearings of the Counter Shafts and Axle are turned on the outside, and accurately fitted into holes bored in the Side Plates, so that it is impossible for them to move; and at the same time very little strain is thrown on the bolts, and the maintenance of the gearing in pitch does not depend upon them.

The Driving Wheels are fitted with compensating motion for turning sharp curves without disconnecting either wheel. The Engine is geared for two speeds, and is steered from the foot-plate. The Boiler is made of best Yorkshire plate, and tested with cold water to 200 lbs. on the square inch; the Fire-box is of Lowmoor Iron, fitted with stays 4 inches apart.

The Cylinder of this Engine is placed on the forward part of the Boiler, and is surrounded by a jacket in direct communication with it; the steam is taken from a dome connected with the jacket. Priming is by this means prevented, the use of steam-pipes is rendered needless, and a considerable economy in fuel is effected.

Each Engine is provided with Fly-wheel, Governors, and a powerful Brake; Lamps, a complete set of Wrenches, Screw-hammer, Firing Tools, Oil Can, spare Gauge Glasses, Studs for Driving Wheels, Two Safety Valves, and Steam Pressure Gauge, free of additional charge.

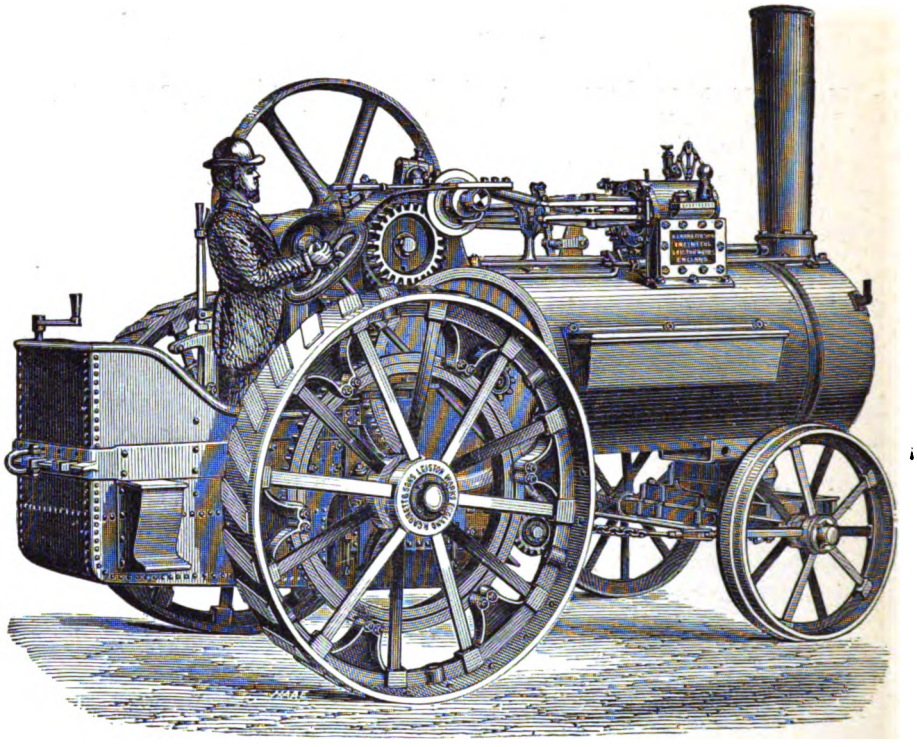
Nominal Horse Power.	4-Horse Power.	6-Horse Power.	8-Horse Power.	10-Horse Power.	12-Horse Power.
Price, with Patent Wrought Iron Brackets and best Crucible Steel Gear throughout...	£300 0 0	£340 0 0	£400 0 0	£460 0 0	£530 0 0
Price, fitted with Malleable and Cast Iron Gear	... ...	£332 10 0	£390 0 0	£448 0 0	£518 0 0
Fire-box, to Burn Wood, extra... ...	£ 10 0 0	£ 10 0 0	£ 10 0 0	£ 15 0 0	£ 15 0 0

Awnings, for hot climates, can be fitted to any of the above Engines, at a cost varying from £10 to £20, according to size and kind.

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R. GARRETT & SONS'

AGRICULTURAL SELF-MOVING ENGINES.



These Self-Moving Engines are of new design, embodying all recent improvements, and eminently suited to every description of agricultural work, as well as to traction and contractors' purposes.

They are provided with fast and slow speeds. The motion is transmitted to the Rims of the Travelling Wheels by means of Spur-Gearing direct from the Crank-Shaft, by which arrangement friction and wear are much reduced.

For rounding corners an arrangement is provided for throwing the Travelling Wheels out of Gear by means of a simple striking Lever on either side.

The boilers are calculated for a maximum working pressure of 150 lbs. on the square inch.

8-Horse Power Single-Cylinder Self-Moving Engine	£420	0	0
10-Horse Power	Ditto	Ditto	Ditto	£480	0	0

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JOHN FOWLER & Co.'s

PATENT ROAD LOCOMOTIVE.

This Improved Road Locomotive is of an entirely new design, the whole of the Gear being cased in the Crank Shaft Box of the Engine so that no dirt or dust can get into it. The Fly-wheel is made sufficiently large for threshing and other purposes, and the general arrangement is so compact that the width of the Engine is considerably lessened.

The Travelling Wheels are of a new patent construction and superior to the ordinary type.

The Boiler is made of Steel and constructed to work at the high pressure of 150 lbs. per square inch. The Fire-box has a round top, by which the danger of accumulation of sediment is avoided. The Engine has one Cylinder. The Gear for traction purposes has two speeds, which are thown into and out of Gear by Levers, so arranged that both speeds cannot be thrown into Gear at the same time.

Each Engine is fitted throughout with best Crucible Cast Steel Gearing, and is supplied with Injector and Pump, two Tanks, Water Elevator and 26 feet of India Rubber Hose, Double Safety Valves, Patent Wrought Iron Road Wheels, Differential Gear, a complete set of Spanners, Screw Wrench, Firing Tools, Tube Brush and Rod, Tool Box, Oil Feeder, spare Guage Glasses and Fusible Plugs, Tin Funnel, two Lamps, a complete set of Spuds and Paddles, Screw Jack, Hammer, Chisel, Oil Can and Pails, Cotton Waste, Waterproof Cover, and complete outfit free of extra charge.

Nominal Horse Power.	3-Horse Power.	6-Horse Power.	8-Horse Power.
Price, *Greig and Aveling's Patents*	£285 0 0	£450 0 0	£510 0 0
Fire-box to burn wood, extra...	£ 10 0 0	£ 10 0 0	£ 10 0 0
Governors, extra	... ...	£ 10 0 0	£ 10 0 0
Additional Tank	£ 15 0 0	... ...	... ...

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RUSHTON & PROCTOR'S

PATENT TRACTION ENGINES.

These Engines are fitted with fast and slow speed Propelling Gear, large Driving Wheels, and Improved Compensating Gear which can be locked and unlocked instantly by the driver, while the Engine is in motion.

The Crank Shaft, Counter Shaft, and Driving Axle are all carried by one stout plate on either side of the Engine and well stayed, so as to relieve the Boiler from all injurious strains.

The Cylinder, Fire-grate, and Tube Surfaces are all of large area, thus conducing materially to economy in fuel and durability.

Each Engine is provided with Patent High Speed Governors, an Improved Reversing Apparatus, and self-acting Equilibrium Valve, which admits dry steam from the highest end of the Boiler.

A complete set of Spanners, Screw Hammer, Firing Tools, Bucket, a pair of Signal Lamps and Flag, and Waterproof Cover are also supplied with the Engines free of additional charge.

6-Horse Power Single Cylinder Traction Engine			£360	0	0
8-Horse Power	ditto	ditto	£420	0	0
10-Horse Power	ditto	ditto	£480	0	0
12-Horse Power	ditto	ditto	£560	0	0
10-Horse Power Double Cylinder Traction Engine			£505	0	0
12-Horse Power	ditto	ditto	£585	0	0
14-Horse Power	ditto	ditto	£655	0	0

ROBEY & Co.'s

PATENT TRACTION ENGINES.

Robey's Locomotive Road Engines are of improved design, the whole of the Gearing is made of Steel and the Boiler has ample heating surface and steam capacity.

The Driving Gear is fitted with a Compensating Differential Motion, Fast and Slow Speeds, and Improved Steerage Arrangement.

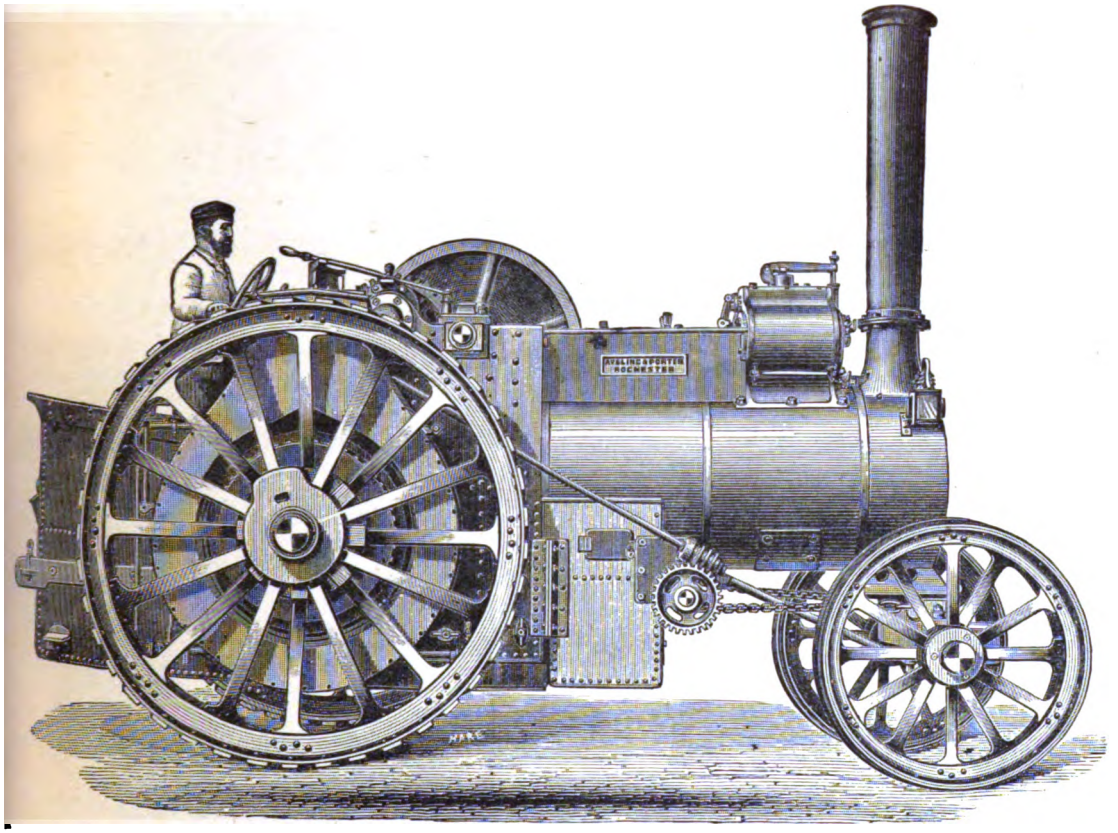
The whole of the Levers for working the Engine are brought conveniently together, so that one man can, without moving, have complete control over it. The Tender is made of ample size and convenient shape for carrying Coals, Water, Tool Box, &c., and, when required, can be fitted with Improved Water Lifter and Suction Hose for filling the Tank.

6-Horse Power Single Cylinder Traction Engine	£370	0	0

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AVELING & PORTER'S

NEW ROAD LOCOMOTIVE STEAM ENGINE.



The Steam Jacketed Cylinder is placed on the forward part of the Boiler. The patent Crank Shaft Brackets are formed out of the Side Plates of the Fire-box extended upwards and backwards, carrying the Crank Shaft, Counter Shaft, and Driving Axle Bearings, in one plate. Leakage from bolts is thus avoided, &c. The Driving Wheels, 7 feet in diameter and 16 inches in width, are constructed of Wrought T Iron of a new and specially strong section, with Steel Diagonal Plates; the Wheels are in accordance with the new Act of Parliament. When Engines are required to work over paved roads the Driving Wheels are fitted with Adams' Patent Spring Tires. A Winding Drum, capable of holding 100 yards of $\frac{3}{4}$ inch steel wire rope, is fitted to the Driving Axle when required. The tender and water tanks are constructed to carry an extra supply of water. An Injector, Water Elevator, with 26 feet of suction hose, Lamps, and other necessary tools, &c., are supplied with each Engine free. The Compensating Gear Wheels are of large diameter, and made from the Best Crucible Cast Steel. The Boiler is made of best best quality of Yorkshire iron, double rivetted, and capable of working at a pressure of 150 lbs. The Fire-box is of Lowmoor iron fitted with stays, 4 inches apart.

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AVELING & PORTER'S

NEW ROAD LOCOMOTIVE STEAM ENGINE

(CONTINUED.)

The whole of the Crank Shaft and Counter Shaft Gearing is arranged to work between (instead of outside) the Wrought Iron Brackets, and the Fly-wheel is fixed close to the Crank Shaft Bearings. The Gearing is all of the **Best Crucible Cast Steel**, and the Pinions for the two speeds are keyed fast upon the Crank Shaft, instead of sliding on "feathers," which are a constant trouble, on account of their working loose. In the arrangement for altering the speed, the intermediate shaft is fixed, and serves as a stay to the side plates, and the Sliding Sleeve, which carries the Spur Wheel and the fast and slow speed Pinions, revolves on it. The two Crank Shaft Pinions are of the same size, and the intermediate Spur Wheel gears with one or the other, as required.

If the Sliding Sleeve be moved to the right, one of the Crank Shaft Pinions comes into gear, and the right hand Sleeve Pinion also gears into the right hand Spur Wheel upon the Counter Shaft, and the Engine is in slow speed. The Gear and Shafting are of very strong proportions, and the wearing surfaces are ample. This arrangement materially reduces the width of the Engine, and brings the Driving Wheels much closer to the Axle Bearings.

Nominal Horse Power.	4-Horse Power.	6-Horse Power.	8-Horse Power.	10-Horse Power.	12-Horse Power.
Price, with Patent Wrought Iron Brackets and Crucible Steel Gear	£400 0 0	£450 0 0	£510 0 0	£580 0 0	£660 0 0
Fire-box, to burn wood, extra	£ 10 0 0	£ 10 0 0	£ 10 0 0	£ 15 0 0	£ 15 0 0

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FOWLER'S

LOCOMOTIVE STEAM PLOUGHING ENGINES.

Messrs. Fowler and Co. manufacture their Steam Ploughing Machinery preferably on the **Double Engine System.** By this arrangement two Traction Engines, fitted with Winding Drums and supplied with 800 yards of Fowler's Special Best Hard Steel Rope, move along opposite headlands, each alternately drawing the implement in use towards itself by a direct pull, the Engine not in work paying out the rope while moving into position for the return journey.

By this system no time is lost in fixing tackle, the Engines being ready to start in a field immediately they are in position on the headlands.

The Engines are made of 6, 8, 14, 16, and 20-Horse Power, with Single Steam Jacketed Cylinders and Steam Domes. Spur Wheels made entirely of the Best Crucible Cast Steel are used for the Travelling Gear; the Road Wheels have two speeds, and are from 16 to 24 inches wide; they can be made any other width at a cost of 30/- per inch. The Engines can be used for Hauling, Thrashing, Pumping, Grinding, Sawing, or any other agricultural operation.

The winding apparatus consists of a horizontal Drum, which uniformly winds or unwinds the wire rope by means of Patent Coiling Gear without any attention from the man in charge.

LARGE DOUBLE ENGINE SYSTEM OF STEAM CULTIVATION.

Two 20-Horse Power Single Cylinder Traction Engines, each with Self-acting and Reversing Gear, Double Speed on ploughing motion; all Shafts, Hind Axle, Bracket on driving side, and all Gearing liable to breakage, of Steel; Tank, Steerage, 24 inch Road Wheels, Winding Drum, with Patent Self-acting Coiling Gear, Spuds or Paddles, Tools and Tool-box; complete for Steam Cultivation.

Price £2100 0 0

800 yards No. 1 Fowler's Special Best Hard Steel Rope, fitted with Eyes, £112.

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FOWLER'S

LOCOMOTIVE STEAM PLOUGHING ENGINES

(CONTINUED.)

Two 16-Horse Power Single Cylinder Traction Engines, with Wrought Iron Brackets, each with Self-moving and Reversing Gear, and **Patent Circular Equilibrium Slide Valve**; and with Double Speed and Steel Gearing on Road Motion; Tank, Steerage, Road Wheels 6 feet diameter, Patent Winding Drum with removeable ring of Gear, Patent Self-acting Coiling Gear, Spuds, Tools and Tool-box; complete for Steam Cultivation.

Price **£1570 0 0**

800 Yards No. 1 Fowler's special best hard Steel Rope, fitted with eyes, £92.

Two 14-Horse Power Single Cylinder Traction Engines, with Wrought Iron Brackets, each with Self-moving and Reversing Gear, and with Double Speed and Steel Gearing on Road Motion; Tank, Steerage, 20 inch Road Wheels, Winding Drum, having Patent Self-acting Coiling Gear, Spuds, Tools and Tool-box; complete for Steam Cultivation.

Price **£1430 0 0**

800 Yards No. 1 Fowler's special best hard Steel Rope, fitted with eyes, £92.

Two 8-Horse Power Single Cylinder Traction Engines, with Wrought Iron Brackets, each with Self-moving and Reversing Gear, and with Double Speed and Steel Gearing on Road Motion; Tank, Steerage, and 18 inch Road Wheels, Winding Drum, Patent Self-acting Coiling Gear, Spuds, Tools and Tool-box; complete for Steam Cultivation.

Price **£1170 0 0**

800 Yards No. 1 Fowler's special best hard Steel Rope, fitted with eyes, £76.

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FOWLER'S

SMALL DOUBLE ENGINES.

(FARMER'S SET.)

This Set is similar in every respect to Fowler's Large Double Engine System; the Engines are each made of 6-Horse Power Nominal, the actual Horse Power being four times the Nominal.

The Boilers are constructed as light as possible for a working pressure of 100 to 120 lbs. per square inch.

The Winding Drums are each supplied with 400 yards of Steel Wire Rope. Their speed is somewhat less than that of the large sets so as to gain an increase of power, and to enable the Tackle to deal with the heaviest soils.

The Engines are sufficiently small and light to enable them to pass through any ordinary field gate, and to travel over soft ground. They can, in a short time, be converted into two Agricultural Locomotives by removing the Winding Drum and Ploughing Gear, and shifting the Fore-carriage and Front Wheels back.

FARMER'S SMALL SET.

Two 6-Horse Power Single Cylinder Traction Engines, with Wrought Iron Brackets, with Self-moving and Reversing Gear, Two Speeds, Tank, Steerage, and 16 inch Road Wheels, Winding Drum, Patent Self-acting Coiling Gear, Spuds, Tools and Tool-box; complete for Steam Cultivation.

Price £900 0 0

800 Yards No. 1 Fowler's special best hard Steel Rope, fitted with eyes, £60; if with Steel Gear on Hind Axles, extra for each Engine, £25.

THE DOUBLE DRUM SET.

Consists of an 8 or 12-Horse Power Engine, with Two Winding Drums, Anchor, 1600 yards of Rope (1200 yards only being required when working direct), Two Claw Anchors, Two Snatch Blocks, Twenty Rope Porters, and the necessary Implements.

12-Horse Power Single Cylinder Traction Engine, with Self-moving and Reversing Gear, and with Double Speed and Steel Gearing on Road Motion, Tank, Steerage, Two Winding Drums with Patent Self-acting Coiling Gear, Spuds, Tools and Tool-box; complete for Steam Cultivation.

Price £680 0 0

Patent Self-moving Anchor, with 6 Discs, Lifting Jack, Headland Ropes, and all Tools Complete ... ... £ 60 0 0
1200 yards No. 1 Fowler's special best hard Steel Rope, fitted with eyes ... £114 0 0
10 Large and 10 Small Rope Porters ... ... £ 25 0 0
Extra Parts and Rope required when working with Engine stationary ... ... £ 50 0 0

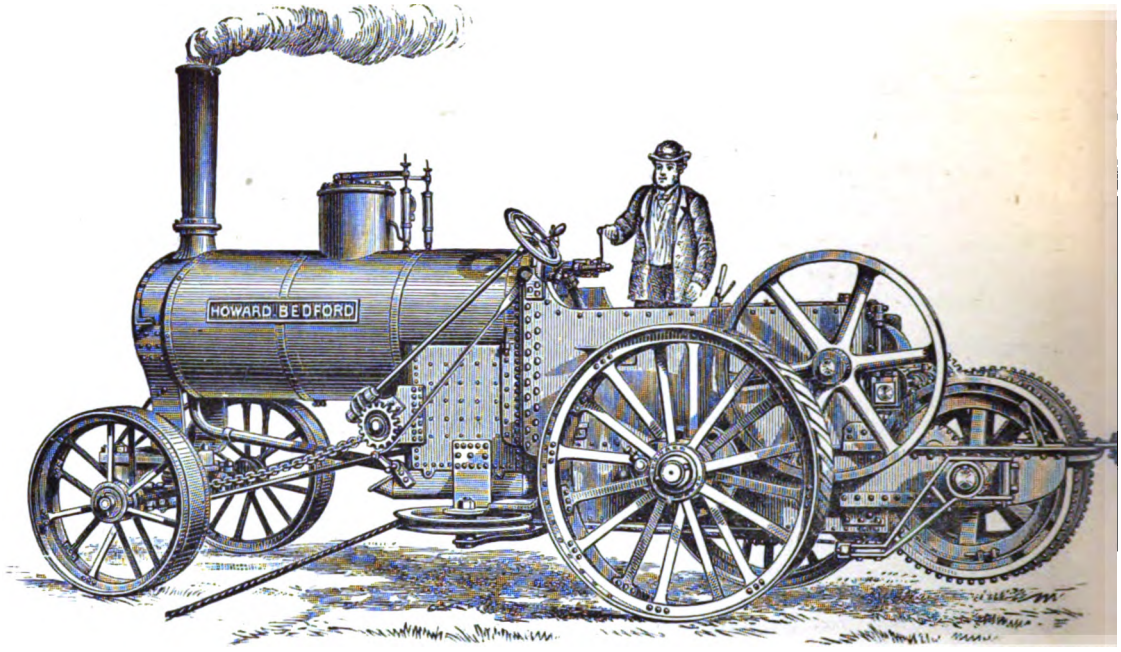
8-Horse Power Single Cylinder Traction Engine, with Self-moving and Reversing Gear &c., &c., as before described.

Price £600 0 0

Patent Self-moving Anchor, with 4 Discs, Lifting Jacks, Headland Ropes, and all Tools complete ... ... £ 49 0 0
1200 yards No. 2 hard Steel Rope, fitted with eyes ... ... £ 84 0 0
10 Large and 10 Small Rope Porters ... ... £ 25 0 0
Extra Parts and Ropes required when working with Engine stationary ... £ 50 0 0

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HOWARD'S
LOCOMOTIVE STEAM PLOUGHING & THRASHING ENGINE.



The Farmer's Engine, as illustrated above, is simple in construction, easy to manage, and readily adapted to every variety of farm work.

For Steam Ploughing it has proved very economical in fuel and attendants, while it is neither too large nor too heavy for ordinary farm purposes.

The Windlass is mounted upon the Engine in such a manner that it can be detached in a few minutes when not required.

8-Horse Power Engine, with Two Winding Drums	£520	0	0
12-Horse Power Engine, with Two Winding Drums	£680	0	0

HOWARD'S
ROAD LOCOMOTIVES.

These Engines are the same as the Farmer's Engine, but without the Winding Drums, and are adapted for Thrashing, Grinding, and other farm work, as well as for road purposes

The Gear Wheels and Axles are all made of Steel; the Road Wheels are of Wrought Iron, and as light as is consistent with strength.

As none of the Machinery is exposed to view when travelling, the Engines are not so liable to frighten horses on the road.

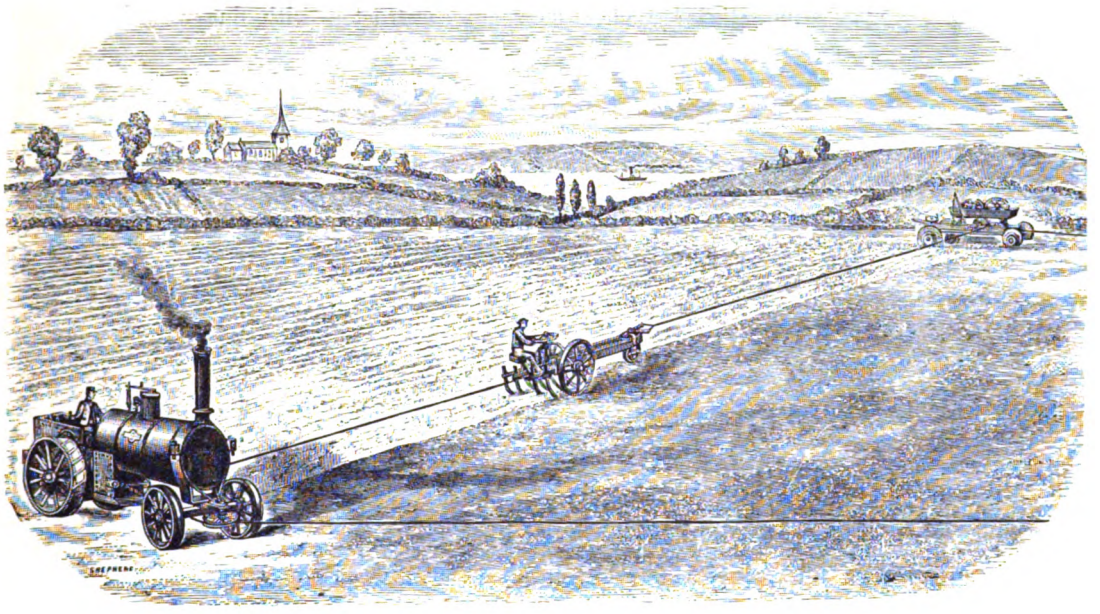
The Engine portion is entirely separate from the Boiler; an arrangement which gives great steadiness in work and facilitates oiling, inspection, and cleaning.

8-Horse Power Road Locomotive	£430	0	0
12-Horse Power Road Locomotive	£580	0	0

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HOWARD'S

STEAM CULTIVATING MACHINERY ON THE SINGLE ENGINE SYSTEM.



The above illustration shows "The Farmer's Engine" and a seven-tined Steam Cultivator at work on the direct system, in which the Engine moves itself along the headland at each bout as the work proceeds, as well as the Anchor on the opposite headland.

With this Apparatus, less time and labour are required to start work in the field than with any other single Engine arrangement, also a shorter length of rope is needed. Only two men—the driver and the ploughman—with a lad for the rope porters, work the Apparatus, which is therefore a very economical method of steam ploughing.

Instead of moving "The Farmer's Engine" on the headland as above described, it is often worked on the stationary system. This plan of working is often desirable in wet seasons, also when cross cultivating in the Spring, or working hilly or irregularly shaped fields.

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CLAYTON & SHUTTLEWORTH'S

PATENT SELF-MOVING ENGINES.

These Engines are adapted for driving Thrashing Machinery and Steam Ploughing Tackle, or for hauling heavy loads on ordinary roads. They are constructed with due regard to strength, handy arrangement, and easy and effective steerage; the Driving Wheels have great width and fast and slow speeds, and are both always in gear; the wearing and working parts have steeled surfaces, and the Tender has large storage capacity.

The Boiler is of the most approved Locomotive Type, efficiently stayed, and provided with the usual fittings, together with Reversing Link Motion, Brake, complete set of Spanners, Screw-hammer, Firing Irons, Bucket, Waterproof Cover, Pair of Lamps, and Signal Flag.

Printed instructions are sent with each Engine for the guidance of the purchaser and the attendants, including official copies of the Acts of Parliament relating thereto.

For filling the Water Tank from way-side ditches or ponds a Steam Water Lift is supplied, if required.

6-Horse Power Single Cylinder Traction Engine			...	...	...	...	...	...	£340	0	0
8-Horse Power	ditto	ditto	...	...	...	...	...	...	£400	0	0
10-Horse Power	ditto	ditto	...	...	...	...	...	...	£460	0	0
10-Horse Power Double Cylinder Traction Engine			...	...	...	...	...	...	£505	0	0
12-Horse Power	ditto	ditto	...	...	...	...	...	...	£585	0	0
14-Horse Power	ditto	ditto	...	...	...	...	...	...	£655	0	0

Steam Water Lift, with 21 feet of Suction Hose, extra £10.

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TURNER'S
IMPROVED MALT CRUSHERS,
With Equal Rollers, for Steam Power.



This engraving represents Turner's Improved Malt Mill with Equal Rollers. The Rolls are of equal size, 9 inches diameter, 21 inches long. Rolls of this description generally wear badly, owing to the defective method of applying the pressure; this is here obviated, the pressure being equalized on both bearings by means of a compound wedge, and rendered elastic by strong spiral springs. The adjustments, both of the pressure and feed, can be regulated with great precision. It crushes from 10 to 15 qrs. of Malt per hour.

The special advantages of this Mill are that it requires small space, and the Rollers being entirely covered, no dust can escape.

Price £32 0 0

A smaller sized Mill of same design, with Rolls, 9 inches diameter, 12 inches wide.

Price £18 10 0

Pulleys extra, according to size.

MALT CRUSHERS,
With Large and Small Rollers, for Steam Power.

	Diam. and Width of Large Roll. Inches.	Diam. and Width of Driving Pulley. Inches.	Power required Steam. Horse Power.	Price.	Pulley extra.
No. 8 ...	48½ by 6 ...	25 by 5 ...	2½ ...	£22 15 0 ...	£1 5 0
No. 1 ...	46 by 4 ...	20 by 3¾ ...	1 ...	£14 10 0 ...	£1 0 0
No. 2 ...	38 by 3½ ...	18 by 3¾ ...	1 ...	£ 9 12 0 . .	£0 17 6

Crank Handles are supplied with the Mills Nos. 1 and 2, so that they can be worked by hand if necessary.

"EXCELSIOR" MALT CRUSHER,
For Hand Power, No. 7.

This Malt Crusher is easily worked by one or two men, and will crush fifteen bushels of Malt per hour; it crushes the Malt without grinding it into powder, and loss from dust is thus prevented.

The Rolls have smooth surfaces and require no sharpening or re-cutting; the passage of a stone or nail between them does no injury, as the pressure is applied through springs.

Price of Mill on Iron Stand £7 12 0

Price of Mill on Brackets £7 0 0

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ROBEY & CO.'S MAIZE SHELLER.

This Machine is portable, being mounted on four strong wood wheels, and will Shell Maize at the rate of sixty sacks of heads per hour.

The grain is separated from the cobs by a Cylinder revolving in a Concave fitted with Teeth; the cobs passing out at one end, while the grain is carried over a number of Sieves or Riddles and exposed to the action of a strong blast, which effectually removes all impurities.

Price of Maize Sheller, with Riddles, Blower, and Travelling Wheels £90 0 0

Price of Shelling Cylinder and Apparatus only, without Sheller, Blower, and Travelling Wheels... ... ... £30 0 0

MALT KILN WIRE FLOOR.

Wire Floor for Malt Kilns of strong Woven Wire, price from 1/- per square foot.

MALT PLOUGH.

BOBY'S IMPROVED MALT PLOUGH.

Price £1 0 0

MALT SCREENS.

BOBY'S IMPROVED MALT SCREENS.

In these Screens the Crossbars are made of stout hoop iron, with round holes exactly the size of the wire punched through them for the longitudinal wires to pass. The Screens are therefore perfectly rigid and very superior to the old kind of Malt Screen, in which the wires are simply bound to the Crossbars with thin binding wire and very apt to become loose or incorrectly spaced.

The Wood Frame and Hopper are made of hard well-seasoned wood, and the Hopper is also provided with a Sliding Board and Screw to regulate the feed.

The Malt falls over a series of steps in the Screen, which remove the dust more effectually than a flat surface.

PRICES:—

No. A, with Wire Part 3 feet wide and 3 feet 8 inches long £4 10 0

No. B, with Wire Part 3 feet 6 inches wide and 4 feet 4 inches long £5 10 0

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PENNEY & CO.'S

MALT SCREENS.

These Screens are made of strong wires wrapped round the Iron Cross Bars, so that the Meshes cannot be displaced or wear loose; the thin lacing wires, so liable to wear out, are entirely dispensed with.

SIZE OF WIRE BED.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
Width	2 6	3 0	3 0	3 6	3 6
Depth	3 0	3 0	3 6	3 6	4 0
Price	£2 18 0	£3 10 0	£4 0 0	£4 8 0	£4 15 0

BOBY'S

PATENT DOUBLE MALT SCREEN.

This Screen requires very little power to work it; Steam, Horse, or Hand Power can be employed, as may be most convenient; it is placed so that the Malt falls direct on to the Malt Rolls.

Stones, Beans, Nails, and other foreign substances are effectually separated, and fall clear of the Screen into any receptacle provided for the purpose.

The best and stoutest Malt is well separated from the thin Malt, while the dust, which is very injurious in the mash tun, is, by means of the Double Screens, more thoroughly removed than by any other means. The thin Malt can thus be ground separately very fine to very great advantage.

Double Malt Screen to do 10 quarters per hour				£25	0 0
Ditto	ditto	15	ditto	£35	0 0
Ditto	ditto	20	ditto	£42	0 0
Ditto	ditto	30	ditto	£50	0 0
Separator, for removing Stones, &c. ... ...extra				£ 2	5 0
Pulley, for Power ... ...extra				£ 0	10 6

The Dimensions of Malt Screen, over all, for 10 quarters per hour are as follows :—

	ft. in.		ft. in.		ft. in.
Height	6 4	Length	7 6	Width	3 6

For other sizes, the width only is increased.

The addition of Separator, for removing Stones, saves the wear of the Malt Roll very materially.

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MANGERS AND STABLE FITTINGS.

Angle Manger, with Curved Front and Front Ring, for Stall or Loose Box.

Japanned, 7/-. Galvanized, 11/-. If with Brass Plug and Washer, 3/- extra.

Angle Manger, with Straight Front and Front Ring, for Stall or Loose Box.

	ft.	in.		Japanned.				Galvanized.		
No. 4.	2	6	... ...	£0	10	6	...	£0	16	0
No. 5.	3	0	... ...	£0	11	6	...	£0	17	0

If with Brass Plug and Washer, 3/- extra.

Combined Manger and Water Trough, for Right or Left Hand Corners, Suitable for Loose Box.

		Japanned.				Galvanized.		
No. 6.	Manger and Water Trough	£1	4	0	...	£2	0	0

If with Brass Plug and Washer, 3/- extra.

Straight Manger, with Front Ring, for Stall.

		ft.	in.		Japanned.				Galvanized.		
No. 7.	Length,	3	2	... ...	£0	16	0	...	£1	1	0

If with Brass Plug and Washer, 3/- extra.

Straight Manger for Right or Left Hand Corners, with Front Ring, for Loose Box.

		ft.	in.		Japanned.				Galvanized.		
No. 8.	Length,	2	6	... ...	£0	15	0	...	£1	0	0
No. 9.	Length,	3	0	... ...	£0	16	0	...	£1	1	0

If with Brass Plug and Washer, 3/- extra.

Strong Straight Manger, with Front Ring.

		ft.	in.		Japanned.				Galvanized.		
No. 10.	Length,	3	1	... ...	£0	15	6	...	£1	2	0

If with Brass Plug and Washer, 3/- extra.

Manger, with Front Ring, Water Trough, and Wrought Iron Rack, for Loose Boxes.

No. 12.	With Japanned Rack, Manger, and Water Trough	£2	15	0
No. 12.	With Galvanized ditto ditto	£3	10	0
No. 13.	With Japanned Rack and Manger	£2	5	0
No. 13.	With Galvanized ditto	£2	17	6

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MANGERS AND STABLE FITTINGS

(CONTINUED).

Manger, with Front Ring and Wrought Iron Rack, for Stalls.

No. 15.	With Japanned Manger and Rack, 5ft. 6in. long	£2 5 0
No. 15.	With Galvanized ditto ditto	£2 17 6
No. 16.	Extra strong, 6ft. 6in. long, Japanned, for Cart Horse Stables	£3 7 6

If with Brass Plug and Washer, 3/- extra.

Manger, with Front Ring, Wrought Iron Rack, and Water Trough, for Stalls.

No. 17.	With Japanned Manger, Rack, and Water Trough	£2 12 6
No. 17.	With Galvanized ditto ditto	£3 10 0

If with Brass Plug and Washer, 3/- extra.

Corner Manger, with Iron Frame and Wood Front, for Stall or Loose Box.

No. 20.	21 inch Manger and Iron Frame, Japanned	£1 14 6
	Ditto ditto with Galvanized Manger	£2 5 0
	Wood Front fitted to ditto	£0 11 6
No. 21.	26 inch Manger and Iron Frame, Japanned	£2 5 0
	Ditto ditto with Galvanized Manger	£2 15 0
	Wood Front fitted to ditto	£0 13 0

If with Brass Plug and Washer, 3/- extra.

Corner Rack, with Iron Frame and Wood Front, for Stall or Loose Box.

No. 22.	21 inch Rack Bottom and Iron Frame, Japanned	£1 4 0
	Wood Front fitted to ditto	£0 11 6
No. 23.	26 inch Rack Bottom and Iron Frame, Japanned	£1 11 6
	Wood Front fitted to ditto	£0 13 0

Cast Iron Circular Hay Rack, for Stall or Loose Box.

		Japanned.		Galvanized.
No. 25.	3 feet wide...	£0 9 0	...	£0 14 0

Cast Iron Corner Hay Rack, for Stall or Loose Box.

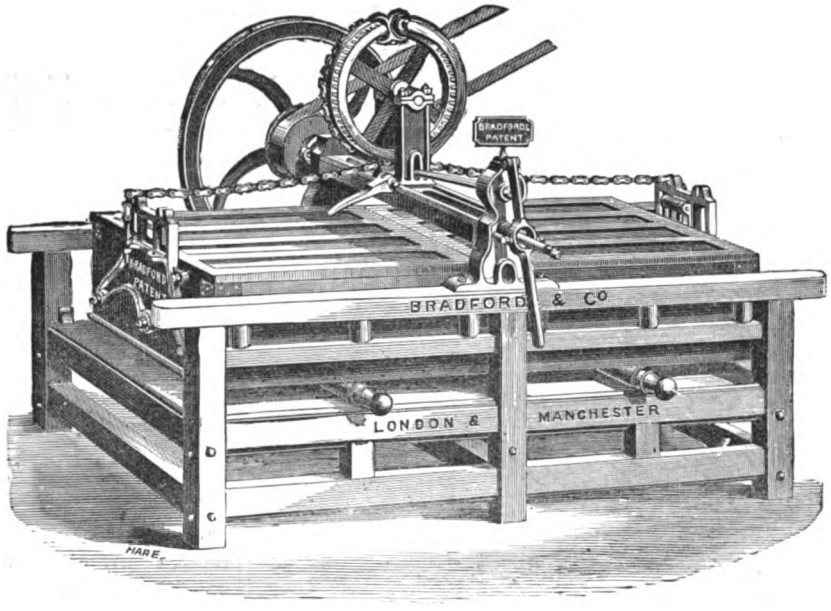
	ft. in.		Japanned.		Galvanized.
No. 27.	2 9	wide...	£0 9 0	...	£0 14 0

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BRADFORD'S

IMPROVED "PREMIER" BOX MANGLE,

With Improved Driving Gear.



This Mangle is of great utility in large establishments where convenient room is available.

The material and construction are very superior.

PRICES:—

5 feet	£12 10 0	6 feet	£14 10 0
5 feet 6 inches	£13 10 0	6 feet 6 inches	£15 10 0
7 feet	£16 10 0		

Packing Cases, 5 feet, 5½ feet, and 6 feet, 14/- extra.

Ditto 6½ feet and 7 feet, 16/6 extra.

BRADFORD'S

PATENT PORTABLE THREE ROLLER MANGLE.

This Mangle is recommended where there is not sufficient room available for the Premier Box Mangle previously described.

The Rollers are very highly seasoned and specially selected. The clothes are folded and passed through the lower Rollers and re-passed through the upper ones.

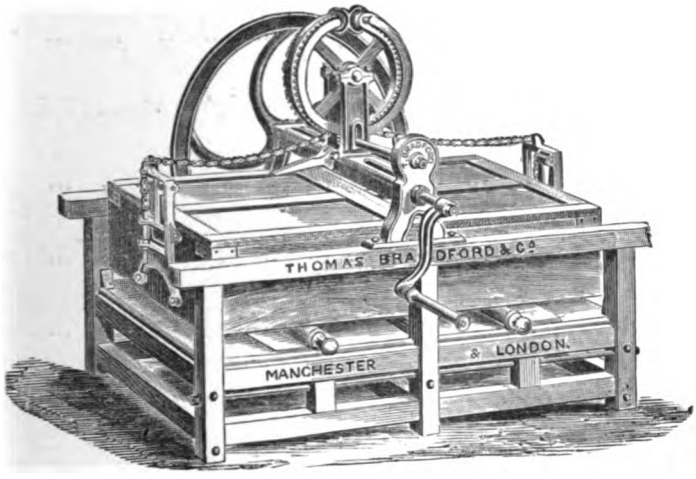
No. 1.	27 inch Rollers...	£5 5 0
No. 2.	30 inch „	£6 6 0
No. 3.	34 inch „	£7 7 0

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BRADFORD'S

IMPROVED "PREMIER" BOX MANGLES

FOR LARGE ESTABLISHMENTS.



This Mangle is specially adapted to the requirements of large Establishments. Although very massive it can be worked by a woman, if required, even when loaded to the utmost extent.

The expedition and superior quality of the work done by it, as compared by the ordinary size, render its first cost a secondary consideration.

Large size, 8ft. 6in. by 3ft. 2in. Bed,	fitted for Hand and Steam Power...	...	£35	0 0
Medium size, 7ft. by 3ft. Bed,	ditto	ditto	£26	10 0
Ordinary size, 7ft. by 2ft. 8in. Bed,	ditto	ditto	£20	10 0

BRADFORD'S

PATENT HOT CYLINDER MANGLE OR CALENDER,

Heated by Gas or Steam.

These Calenders give a splendid finish to Table and other Linen; in case of crease or overlap the bottom Roller can be instantaneously lowered, and the article liberated from pressure.

No. 68. With 30 inch Rollers	£22	10 0
No. 69. With 40 inch Rollers	£25	0 0

For Hand or Power.

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PROCTOR'S

ARTIFICIAL MANURES.

Barley Manure for growing Barley for Malting Purposes	per ton	£ 8	0	0
Bone Superphosphate of Lime, prepared for use with the Liquid Manure Drill or Dry Manure Distributor	per ton	£ 7	0	0
Clover Manure, for producing rapid growth	per ton	£ 8	0	0
Concentrated Corn Manure, rich in Ammonia and suitable for strong land ...	per ton	£12	0	0
Concentrated Root Manure, for Cabbage, Kohl Rabi, Mangolds, or Potatoes—specially suited for heavy soils	per ton	£12	0	0
Grass Manure, No. 1, suitable for old Pastures and Dairy Farms	per ton	£ 7	10	0
Grass Manure, No. 2, suitable for land recently laid down in Grass and old Pasturage required for Mowing	per ton	£ 8	10	0
Hop Manure, for encouraging the growth of the Bine and stimulating production,	per ton	£10	0	0
Mangold and Kohl Rabi Manure...	per ton	£ 8	0	0
Oat Manure; may be applied with the seed or used broadcast as a top dressing,	per ton	£ 8	0	0
Pea and Bean Manure	per ton	£ 8	0	0
Potato Manure, for mitigation of Potato Disease	per ton	£ 8	0	0
Wheat Manure, for production of heavy crops of Corn and increased growth of Straw	per ton	£ 8	0	0

The above prices are subject to the fluctuations of the Market.

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FARMER'S
ARTIFICIAL MANURES.

Chemical Guano, A, for Roots, Hops, and Winter Wheat	per ton	£ 8	15	0
Ditto B, for Corn, Grass, and Potatoes	per ton	£11	10	0
Ditto C, for Top Dressing, a substitute for Peruvian Guano... ...	per ton	£15	0	0
Dissolved Bones, for Turnips	per ton	£ 7	0	0
Ditto pure, for Turnips and general use	per ton	£ 8	15	0
Superphosphate of Lime, 25 per cent Soluble Phosphate	per ton	£ 5	10	0
Ditto ditto 30 per cent ditto	per ton	£ 6	5	0
Ditto ditto 35 per cent ditto	per ton	£ 7	0	0
Ditto ditto 38 per cent ditto	per ton	£ 8	0	0

WEBB'S MANURES.

Bones, ½ inch, guaranteed pure and in best condition	per ton	£ 9	5	0
Bones, ¼ inch, ditto ditto	per ton	£ 9	10	0
Bones, fine, ditto ditto	per ton	£ 9	15	0
Bone Superphosphate of Lime	per ton	£ 7	0	0
Superphosphate of Lime, 26 to 29 per cent. Soluble Phosphate	per ton	£ 5	5	0
Ditto ditto 45 per cent. Soluble Phosphate...	per ton	£ 9	10	0

PASS'S MANURES.

Ammonia Fixed Ichaboe Guano, containing 9 to 10 per cent. Ammonia and 20 to 22 per cent. Soluble Guano Phosphates	per ton	£13	10	0
Phosphated Ichaboe Guano, containing 6 to 7 per cent. Ammonia and 25 to 27 per cent. Soluble Guano Phosphates	per ton	£13	0	0
Animal Charcoal Superphosphate, containing 30 to 32 per cent. Soluble Phosphates,	per ton	£ 7	5	0
Guanate, a preparation of Ichaboe Guano and other fertilizers, containing 3 per cent. Ammonia, 13 to 15 per cent. Soluble Phosphates, 18 to 20 per cent. Alkaline Salts —specially prepared for Cereal Crops...	per ton	£ 7	10	0

The above prices are subject to the fluctuations of the market.

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COULTAS'

BROADCAST MANURE DISTRIBUTOR,

(CHAMBERS' PATENT).

This Implement has a Cylindrical Barrel with small projections cast on the surface, which supply the proper quantity of Manure to the Delivery Box.

Steel Scrapers are placed beneath the Box, the pressure of which on the Barrel can be regulated according to the adhesiveness of the Manure.

A Vibrating Stirrer is fitted inside the Manure Box, which ensures a regular delivery from the Box to the Barrel, however moist the contents of the Box may be.

The quantity of Manure distributed is regulated by a Slide, and can be varied from two bushels to any quantity per acre.

Price, 7 feet between the wheels	£19	0 0
For every additional six inches in width ... ...extra	£ 1	0 0
For Steerage ... ...extra	£ 5	0 0
Guide Box, for Sowing in Rows ... ...extra	£ 1	10 0
Frame Shafts... ... ...extra	£ 0	10 6

REEVES'

PATENT BROADCAST MANURE DISTRIBUTOR.

This is a very simple and cheap Distributor for distributing any quantity of dry Artificial Manure or Guano, from four to eighty bushels per acre, and is also very superior for Top Dressing with Soot.

It distributes the Manure 6 feet wide, and can do eight acres per day when worked by one Horse.

Price of Distributor, Wheels seven feet wide from centre to centre...	£12	10 0
To sow in rows 28 inches apart ... ...extra	£ 0	15 0
For every additional six inches ... ...extra	£ 0	10 0
For Travelling Wheels, with 3½ inch tires for wet lands ... ...extra	£ 1	0 0

REEVES'

PATENT MANURE DISTRIBUTOR,

For Distributing all Kinds of Artificial Manures in Rows.

This Machine will sow three rows of Manure at 28 inches apart, or broadcast 3 feet 8 inches wide.

Price	£12	0 0
For Travelling Wheels, with 3½ inch tires for wet land ... ...extra ...	£ 1	0 0

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PENNEY'S

ROTARY MANURE AND GRAVEL SCREEN.

This Screen is well adapted for screening large quantities of Manure, Ashes, Gravel, &c. The Mesh is $\frac{5}{16}$ inch, so made that every alternate rod may be taken out, enlarging the Mesh to $\frac{7}{8}$ inch when needed for coarse work.

A boy can turn the Machine.

Rotary Screen, 4 feet long by 2 feet diameter, with Beaters for Manure... ...	£12 0 0
Ditto ditto ditto for Gravel, without Beaters ...	£ 8 0 0

PENNEY'S

MANURE MIXER AND SCREEN,

WITH BEATERS.

Screen, 4 feet long by 2 feet diameter	£12 0 0
Screen, 5 feet long by 3 feet 6 inches diameter...	£22 10 0

REEVES'

PORTABLE IRON MANURE SCREENS.

This Screen is made of Wrought Iron and is fitted with iron support ; strong and durable.

Price... ... ... £2 5 0

Very serviceable for use with Dry Manure Drills and Distributors.

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FOLLOWS & BATES'

IMPERIAL MEAT AND VEGETABLE CHOPPERS.

In these Choppers the Block is made of small sections of well seasoned hard wood, set **endways** of the grain, and revolves under the Knives, which are at the back of the Machine **and work** alternately crosswise.

The Knives are readily adjusted and can be removed and replaced in about a minute.

Meat Chopping Machine, with Block 13 inches Diameter on Low Stand ...	£ 5 5 0
Ditto ditto ditto ditto on High Stand ...	£ 7 7 0
Ditto ditto Block 16 inches Diameter on Low Stand ...	£ 7 7 0
Ditto ditto ditto ditto on High Stand ...	£10 10 0
Improved Meat Chopper, with Block 13 inches Diameter and enclosed Gearing Wheels, on High Stand	£ 8 8 0

AMERICAN MEAT AND VEGETABLE CHOPPERS,

With Revolving Wood Block and Ajustable Knives.

No. 1. Cuts 3 lbs. of Meat in 3 minutes, 8 inch Cylinder	£ 1 10 0
No. 2. Cuts 5 lbs. of Meat in 3 minutes, 10 inch Cylinder	£ 2 5 0
No. 3. Cuts 8 lbs. of Meat in 3 minutes, 12 inch Cylinder	£ 3 15 0
No. 4. Suitable for small Pork Butchers, 15 inch Cylinder	£ 7 0 0
No. 5. Fitted with Double Crank, 20 inch Cylinder, cuts from 100 to 125 lbs. per hour...	£15 0 0

MEAT CUTTING MACHINES.

The Knives in these Machines revolve with the Shaft to which they are attached, **and act as** propellers as well as cutters.

No. 1. For Household Use	£1 10 0
No. 2. Ditto ditto	£2 0 0
No. 3. For large Households...	£2 10 0
No. 4. For Confectioners, &c.	£3 10 0
No. 5. For General Purposes	£5 5 0
No. 6. For Pork Butchers	£7 7 0

Fly-wheel, extra, No. 5, 12s. 6d.; No. 6, 15s. 6d.

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PENNEY'S

WAGON TOP MEAT SAFES,

With Wood Frame, covered with strong Galvanized Woven Wire of fine Mesh on Sides, Back, and Top; fitted with Shelf, Hooks, and Lock.

PRICES:—

Wagon Top Meat Safe,	20 inches	across the	Front	.. ..	£1	1	0
Ditto	ditto	24 inches	ditto	... ...	£1	5	0
Ditto	ditto	27 inches	ditto	... ...	£1	8	0
Ditto	ditto	30 inches	ditto	... ...	£1	12	0
Ditto	ditto	33 inches	ditto	... ...	£1	17	0
Ditto	ditto	36 inches	ditto	... ...	£2	2	0

RIDGE TOP MEAT SAFES.

Similar to the preceding, but with a Wooden Ridge Roof to throw off rain.

Ridge Top Meat Safes,	20 inches	across the	Front	... ...	£1	0	0
Ditto	ditto	24 inches	ditto	... ...	£1	4	0
Ditto	ditto	27 inches	ditto	... ...	£1	7	0
Ditto	ditto	30 inches	ditto	... ...	£1	10	0
Ditto	ditto	33 inches	ditto	.. ..	£1	15	0
Ditto	ditto	36 inches	ditto	... ...	£2	0	0

SQUARE MEAT SAFES.

Similar to the preceding, but with Flat Top and Wood Back; fitted with Shelf and Lock.

Square Meat Safes,	24 inches	across the	Front	... ...	£0	14	0
Ditto	27 inches	ditto		... ...	£0	16	0
Ditto	30 inches	ditto		... ...	£0	19	0
Ditto	33 inches	ditto		... ...	£1	3	0
Ditto	36 inches	ditto		... ...	£1	8	0

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DAY & SONS'

MEDICINAL PREPARATIONS.

Alterative and Diuretic Powders, for Coughs, Colds, Sore Throats, Loss of Appetite, Thick Wind, &c. ... ...per dozen	£0	3	6
Black Drink or Conditioning Draught, for Colic, Fret, or Gripes in Horses, and Scour or Diarrhœa in Cattle, Calves, Sheep, and Lambs, also for Hoven or Blown Cattle ... ...per dozen	£0	19	0
Ewe Drenches or Fever Drink, for Colds, Chills, or Fevers; for Ewes Lambing and Milk Fever, and prevents the Lamb scouring ... ...per dozen	£0	3	6
Husk or Hoose Draught, for Calves, Cows, Yearlings, Sheep, and Lambs, and for Worms in Horses and Colts... ... ...per dozen	£1	0	0
Foot Rot Oils, for Foot Rot in Sheep ... ...per dozen	£1	10	0
White Oils, for every kind of external injury where the skin is not broken ...per dozen	£1	10	0
Purified Driffield Oils, for all Green and Inflammatory Wounds in Horses and Cattle ... ...per dozen	£1	10	0
Dairy Farmer's Medicine Chest	£2	10	6
Flockmaster's Medicine Chest	£5	8	0
Horsekeeper's Medicine Chest	£2	14	0
Stockbreeder's Medicine Chest	£4	1	9

PETTIFER'S

MEDICINAL PREPARATIONS.

Sheep-Dipping Composition, for preventing Fly, Ticks, and Lice; in casks, to dip about 120 Sheep and Lambs	£0	10	0
Ditto, in Casks, to dip about 240 Sheep and Lambs	£1	0	0
Specific for Cure of Scab in Sheep, and Mange in Horses and Dogs, in bottles 3/6 each; in jars, 9/-, 18/-, and £1 16s. each			
Herbal Tonic Medicine, for Tape-worm and for Fever and Scour in Lambs ...per bottle	£0	5	0

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DAY, SON, & HEWITT'S

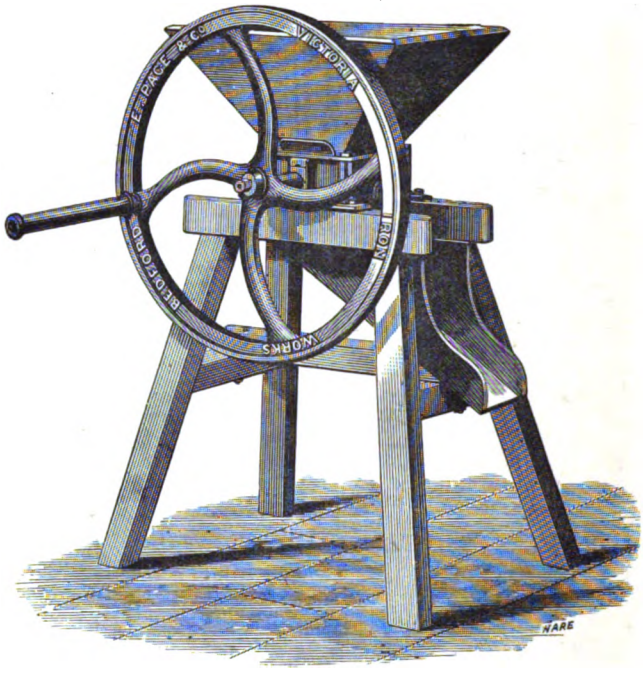
MEDICINAL PREPARATIONS.

Aluminate of Borax, makes a healing lotion for the mouth, for "Foot and Mouth Disease," when dissolved in hot water ... ... per bottle	£0	1	6
Aluminate of Lime Ointment, for Foot Rot and Sore Feet in Sheep or Cattle, per case	£0	5	0
Alcoholic Ether, for Colds and Shivering Fits in Horses and Cattle; promotes perspiration ... ... per bottle	£0	2	6
Balsamic Castor Oil, for Diarrhœa or Scour in Sheep, Calves, and Lambs; should be used before the Gaseous Fluid ... ... per bottle	£0	1	6
Gaseous Fluid, for Debility and Diarrhœa in Cattle, Calves, Sheep, and Lambs; for Colic or Gripes in Horses; and an excellent Tonic for Ewes after a bad parturition ... ... per box, containing one dozen	£1	0	0
Black Physic Balls, an excellent alterative for Horses, and useful to dispel worms, per dozen	£0	8	0
Red Paste Balls, for improving the condition of Horses, and for Coughs, Colds, and Chills ... ... per dozen	£0	7	6
Red Drench, for Inflammatory Disorders in Horses, Cattle, Calves, Sheep, Lambs, and Pigs; useful for Cows and Sheep after parturition ... ... per dozen	£0	13	0
Red Condition Powders, invaluable for Horses after a hard day's work... ... per dozen	£0	7	6
Blister Ointment, recommended for Swellings of the Joints and Tendons, old Strains, Callous Ulcers, Fistula, and Knee or Hock Eruptions ... ... per case	£0	4	0
Sulphuretted Extract Ointment, for Scab or Maggots in Sheep; Mange in Horses, Dogs, Cattle, and Pigs ... ... per case	£0	5	0
Carminative Chalk, useful in cases of severe Diarrhœa ... ... per bottle	£0	1	9

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E. PAGE & Co.'s

IMPROVED BEAN AND MAIZE MILLS.



These Mills are mounted on strong Wood or Iron Frames.

The Cutting Barrels or Rollers are made of very superior quality, with sharp cutting edges. They will kibble Beans or Maize to various degrees of fineness by means of a regulating set screw, and can be easily worked by a man or lad. The feed can be readily adjusted to the amount of power available.

PRICES:—

No. 0, on Wood Frame, fitted with Regulating Feed	... ...	£2	10	0
No. 1, on strong Wood Frame, ditto ditto	... ...	£3	0	0
No. 1, on Iron Frame, ditto ditto	... ...	£2	17	6

The No. 1 Mill will kibble about 10 bushels of Beans per hour.

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TURNER'S

BEAN AND MAIZE KIBBLING MILLS.

Kibbler No. 11 K, small Mill for Hand Power; can be attached to a stool or bench, kibbles both Beans and Maize. The Kibbling Plates are readily renewed at a small cost.

Price of Kibbler No. 11 K, **without** Wood Stand £1 10 0

Kibbler No. 6 K, for Hand Power, rather larger than preceding, provided with Box Pedestal, which also serves as a Packing Case.

Price of Kibbler No. 6 K, with Box Pedestal £2 10 0

Kibbler No. 1 K, for kibbling Beans and Maize by Hand, Horse, or Steam Power.

Price of Kibbler No. 1 K, on Iron Frame £5 0 0
Pulley ... ...extra £0 17 6

Kibbler No. 8 K, for Horse or Steam Power, suitable for kibbling large quantities.

Price of Kibbler No. 8 K, on Iron Frame £9 10 0
Pulley ... ...extra £1 0 0

HUNT & TAWELL'S

BEAN AND MAIZE MILLS.

The Barrel or Cutting Roller of these Mills is formed of a number of separate triangular Steel Cutters held in two end Rings; all three edges of the Cutters can be used in succession and are easily replaced when worn out.

PRICES:—

Bean Mill No. 1, on Iron Column, for Hand Power £3 3 0
Ditto on Iron Bracket... ... ... £3 0 0
Triangular Knives (30 to a set) ... ...per dozen £0 4 0
Cutting Plates, No 1 and 2... ... ...each £0 0 6

Bean Mill No. 2, on Iron Column for Horse or Steam Power £6 0 0
Ditto on Iron Bracket... ... ... £5 10 0
Extra large Fly-wheel ... ...extra £0 5 0
Triangular Knives (37 to a set) ... ...per dozen £0 6 0
Cutting Plates, Nos. 3, 4, and 5 ... ... each £0 0 9

Fast and Loose Pulleys, extra.

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VIPAN & HEADLY'S

BEAN AND MAIZE MILLS.

These Mills are mounted on strong Wood Frames, and firmly bolted together. The Bruising Surface can be re-cut when required. The Corn can be kibbled to various sizes by means of a Regulating Set Screw.

No. 1 Mill, for Kibbling Beans, Maize, Oats, Barley, &c., suitable for a man or lad ... £3 0 0

No. 3 Mill will crush two bushels of Beans or seven pecks of Oats per hour, at 50 revolutions per minute; for one man £5 0 0

Extra Handle £0 3 0

No. 4 Mill, with two Handles, will crush five bushels of Beans, or three bushels of Oats per hour, at 50 revolutions per minute; for two men.

Price, with two Handles... ... ... £6 0 0

No. 5 Mill, for Power only, will crush 22 bushels of Beans, or 12 bushels of Oats per hour, at 100 revolutions per minute.

Price, with Pulley and no Handles £8 0 0

No. 5 B Mill, similar to the above, with all bearings mounted in brasses, and the cutting part covered £9 9 0

ALBION IRON WORKS COMPANY'S

MILLS FOR BEANS, MAIZE, ETC.

The Rollers of these Mills are hooped with Steel, and have cutting edges formed on the face which work against a small adjustable Feed Roller.

Mill No. S K, on Cast Iron Frame, with Steel-faced Roller, Brass Bearings to Spindles, and Brass Oil Covers £5 0 0

Mill No. S K A, on Cast Iron Frame, with Steel-faced Roller and Brass Bearings; with Syphon Oil Cups. Can be worked by a man and a lad, or suitable for Horse Power.

Price, including two Handles... ... ... £6 17 6

Pulley, extra.

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WOODS & COCKSEDGE'S

BEAN AND MAIZE MILLS.

These Mills are mounted on Iron Frames, suitable for kibbling Beans, Peas, and Maize, and are adjustable to grind fine or coarse samples.

Bean Mill	No. A 1, on Iron Frame	£7	0 0
Ditto	No. A 2, ditto	£5	0 0
Ditto	No. A 3, ditto	£3	10 0

Pulley, extra, according to size.

BENTALL'S

BEAN AND MAIZE MILLS.

These small Mills are intended for Hand Power only; they are mounted on substantial pillar frames, and can be bolted to the floor if necessary. The Cutting Barrel consists of a single casting with chilled cutting edges, and will kibble either hard or soft Beans, &c.; the degree of fineness or coarseness of the sample being regulated by a Set Screw.

B K A	Bean Kibbler, with one Handle; will kibble two bushels of Beans per hour	£2	15 0
B K F	Bean and Maize Kibbler, with one Handle, fitted with finer cutting Barrel for Maize; will kibble three bushels of Beans or two bushels of Maize per hour	£3	5 0
M K A	Bean and Maize Kibbler, with one Handle	£3	10 0

SMITH & GRACE'S

BEAN AND MAIZE MILLS.

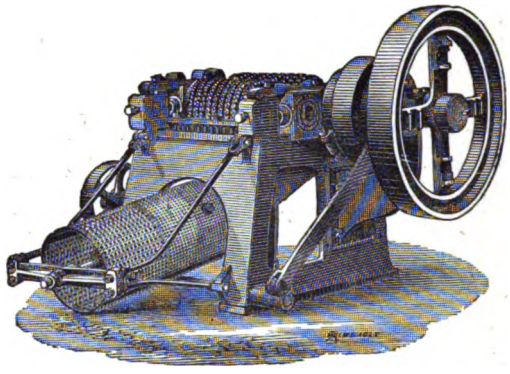
The Grinding surfaces of these Mills are so arranged that they cannot come in contact with each other, thereby reducing the wear.

No. 7.	Single Bean or Maize Mill; can be easily worked by a boy	£2	15 0
No. 7.	Double ditto	£5	0 0

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BONE MILLS.

HALL'S PATENT BONE MILL.



This Mill has an improved method of driving the Rolls by a combination of Differential Gear, and Friction Sheave and Strap, enabling the Rolls to be driven at a speed sufficient for the reduction of the hardest bone and yet arranged so as to slip and prevent damage in the event of any harder substance getting between the Rolls.

The Mill Frame is of a neat and strong design.

The Rolls are composed of separate Rings of Teeth driven entirely by friction, and are adjustable for coarser or finer crushing. They will take in all kinds of bones in any condition and crush to $\frac{3}{4}$", $\frac{1}{2}$", $\frac{1}{4}$", and dust; can be driven by a 3-Horse Power Engine, and will crush four tons of bones per day.

Price of Bone Mill, with Revolving Screen Apparatus £50 0 0

WATSON & HAIG'S BONE MILL.

Bone Mill to crush Bones of every description; power required, 3-Horse and upwards.

Price £30 0 0

Revolving Screen Apparatus ... ... extra £ 4 0 0

(See Bone Mills, Pages 34 and 35.)

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COMBINED MILLS.

Hunt & Tawell's Combined Bean and Maize Kibblers and Corn Crushers,

SUITABLE FOR KIBBLING BEANS AND PEAS AS WELL AS FOR BRUISING OATS, MAIZE, MALT, &c.

No. 15. Combined Universal Mill, with Kibbler and Corn Crusher, with equal sized Rollers, mounted on Iron Frame, for Hand or Horse Power; will crush about 24 bushels of Oats or Linseed per hour with 2-Horse Power, 150 revolutions per minute.

Price ... £11 11 0

No. 18. Combined Universal Mill, with Kibbler and Corn Crusher for Hand or Power, on Iron Frame; will crush about 30 bushels of Oats or Linseed per hour. Power required 2-Horse Power, speed 150 to 170 revolutions per minute.

Price ... £15 0 0

No. 16. Combined Universal Mill, with Kibbler and Corn Crusher, on Iron Frame, for Power only; will crush about 35 bushels of Oats or Linseed per hour. Power required 5-Horse Power, speed 150 to 170 revolutions per minute.

Price ... £21 0 0

If fitted with Crotch Cross and Bolt, or Gripe, for Horse Power, extra, 4/-.

Woods, Cocksedge, & Co's Combined Bean and Maize Kibblers and Corn Crushers,

FOR CRUSHING OATS, BARLEY, LINSEED, MALT, &c., AND FOR KIBBLING BEANS, PEAS, AND MAIZE.

No. A 1. Universal Mill for Steam or Water Power, to crush 35 to 50 bushels of Oats and 30 to 40 bushels of Beans per hour.

Price ... £26 10 0

No. 1. Universal Mill for Horse, Steam, or Water Power, to crush 20 to 25 bushels of Oats, Barley, or Linseed, and 30 bushels of Beans or Maize per hour.

Price ... £18 18 0

No. 2. Universal Mill for Hand, Steam, or Horse Power, to crush 6 to 10 bushels of Oats and 12 bushels of Beans per hour.

Price ... £12 12 0

No. 4. Universal Mill for small Horse Gear or two strong lads, to crush 4 to 6 bushels of Oats and 8 bushels of Beans per hour.

Price ... £ 9 4 0

No. 3. Universal Mill for Hand Power, to crush 2 bushels of Oats and 2 bushels of Beans per hour.

Price ... £ 6 5 0

Pulleys, extra.

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COMBINED MILLS.

Turner's Combined Bean and Maize Kibblers and Corn Crushers.

These Mills have two separate Hoppers, both mounted on one frame, and are a combination of the Kibbling Mill with the Smooth Roller Mill.

No. 1 B Combined Bean and Maize Kibbler and Corn Crusher, for Horse or Steam Power; will crush about 20 bushels of Oats, or 12 bushels of Linseed, and 20 bushels of Beans per hour. Steam Power required, 1½-Horse Power; revolutions per minute, 120; with pair of Crank Handles.

Price £17 17 0
Driving Pulley ... ...extra £ 1 0 0

No. 2 B Combined Bean and Maize Kibbler and Corn Crusher, for Hand, Horse, or Steam Power; will crush about 12 bushels of Oats, or 8 bushels of Linseed, and 12 bushels of Beans per hour. Power required, 1-Horse; revolutions per minute, 120; with Pair of Crank Handles.

Price £12 5 0
Driving Pulley ... ...extra £ 0 17 6

No. 7 B Combined Bean and Maize Kibbler and Corn Crusher, for Hand Power; will crush about 4 bushels of Oats, or 3 bushels of Linseed, and 4 bushels of Beans per hour. Can be worked by a man; with Pair of Crank Handles.

Price £10 0 0

No. 6 B Combined Bean and Maize Kibbler and Corn Crusher, for Hand Power; will crush about 2 bushels of Oats, or 1½ bushels of Linseed, and 2 bushels of Beans per hour. Can be worked by a strong lad.

Price, with one Crank Handle... ... ... £ 6 16 6
Extra Crank Handle ... ...extra £ 0 3 6

No. 11 B Combined Bean and Maize Kibbler and Corn Crusher, for Hand Power; can be worked by a boy.

Price, on Box Pedestal, which serves as a Packing Case ... ... £ 5 0 0

No. 11 B Combined Bean and Maize Kibbler and Corn Crusher, for Hand Power, with Packing Board.

Price ... ... £ 4 5 0

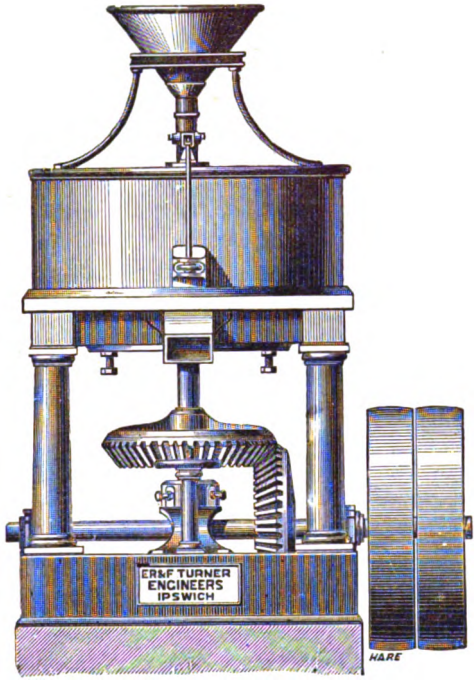
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CORN GRINDING MILLS.

TURNER'S CORN GRINDING MILLS (with Stones).

For Grinding Barley, Oats, Beans, Peas, Maize, and Wheat, and sometimes used for grinding Dry Colours, Clay for fine Earthenware, &c.

Grey Stones may be used for Barley, Oats, Beans, Peas, &c.; but French Stones are preferable to produce fine wheat flour.



The prices following are for Single Mills, from which, prices of any number may be obtained; a Double or Treble Mill in one Frame will cost two or three times the amount of a Single Mill of the same Diameter.

Prices of Single Mills.

Diameter.	French Stones.	Grey fixed and French Runner.	Grey Stones.	Prices without Stones.	Loose Pulley, extra.	Improved Crane to lift Runner Stone, extra.	Cost of Packing.
ft. in.	£	£	£	£	£ s.	£ s.	£ s.
3 0	60	55	50	44	2 5	6 0	3 0
3 6	70	65	60	53	2 10	6 0	3 15
4 0	85	78	70	61	2 15	6 0	4 10

Table of Weights, Power Required, &c., &c., for Single Mills.

Diameter.	Weight Packed.	Measurement.	Power.	Speed of Lay Shaft.	Diameter of Pulley.	Quantity* delivered per hour.
ft. in.	cwts.	ft. cu.	HP.	revs. per min.	in.	bushels.
3 0	29	80	3	150	27	3½
3 6	39	96	3½	135	30	4
4 0	49	105	4	120	32	5

* Of coarse Meal for Feeding purposes about twice these quantities may be reckoned.

The following Tools for use with Grinding Mills are recommended to be supplied :—6 Best Cast Steel Mill Bills, £1 19s.; 2 Handles for ditto, 5/-; Stone Staff in case, £1 15s.

PORTABLE MILLS.

Single Mills may be mounted on a four-wheel carriage for travelling with a Portable Engine at the following extra charges :—3ft. Mill, £15; 3ft. 6in. Mill, £17 10s.; 4ft. Mill, £20. When Mills and Flour Machines are supplied on one run of Wheels, the Elevator would be £7 extra.

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CORN GRINDING MILLS
(CONTINUED).

Turner's Small-Sized Corn Grinding Mills (with Stones).

In these Mills the lower Stone revolves, pressure being applied by a Hand Wheel and Screw. They may be worked by Horse or Steam Power, will grind from three to five bushels of corn per hour, and are applicable to a variety of other purposes. French Stones are recommended on account of their greater durability.

Prices of Small-Sized Mills.

Diameter.	Price with French Stones.	Loose Pulleys, extra.	Cost of Packing.	
ft. in.	£	£ s. d.	£ s.	Improved Crane for 30in. Mill, £5.
1 3	18	0 17 6	1 0	
1 8	26	1 2 6	1 5	
2 0	32	1 5 0	1 5	
2 6	45	1 15 0	1 15	

Table of Weights, Power Required, &c.

Diameter.	Weight Packed.	Measurement.	Power.	Speed of Lay Shaft.	Diameter of Pulley.	Quantity Delivered.
ft. in.	cwt. qrs.	ft. cu.	HP.	Revs. per min.	in.	
1 3	5 2	22½	1½	120	16	from 3 to 5 bushels per hour.
1 8	8 3	22½	1½	280	15	
2 0	12 0	28	2	240	18	
2 6	21 0	50	3	180	22	

The following Tools are recommended to be supplied for use with the Grinding Mills :—6 Best Cast Steel Mill Bills, £1 19s.; 2 Handles for ditto, 5/-; Stone Staff in case, £1 15s.

Turner's Flour Dressing Machines

Are on the most approved principle, and consist of a Cylinder clothed with the best wire cloth of different meshes, in the interior of which, and attached to the Spindle of the Machine, revolve a number of Brushes, which cause the meal to pass through the wire covering of the Cylinder. The whole is enclosed in a neat and substantial wood case. The Machine may be conveniently driven by a Pulley on the Lay Shaft of Grinding Mill.

Sizes, Prices, Weights, and Measurements.

Diameter of Cylinder.	Price.	Price of driving strap from Lay Shaft of Mill.	No. of Sheets.	Quantity will dress per hour.	No. of Qualities	Weight of Machine.	Mts.	Suited for use with following Mill.
in.	£ s.	s. d.				cwts. qrs. lbs.	ft. cu.	
8	13 5	12 6	4	2 sacks	3	2 0 0	20	2′ 6″ and under
12	20 0	22 6	4	3 to 4 sacks	4	3 2 0	35	3′ and 3′ 6″
14	26 10	25 0	5	4 to 5 sacks	4	4 1 0	42	4 feet.

Larger sizes may be had.

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CORN GRINDING MILLS

(CONTINUED.)

Wood & Cocksedge's Corn Grinding Mills (with Stones),

FOR GRINDING WHEAT, BARLEY, BEANS, PEAS, MAIZE, LUMP SUGAR, CHICORY, PERUVIAN BARK, CHARCOAL, &c., &c.

Prices of Corn Grinding Mills, including one Driving Pulley only.

Diameter.		Derbyshire Peak Stones.		French Bed Stone and Derby Runner.		London built French Burr Stones.		Extra, if fitted with Fast and Loose Pulleys.		Crane to lift Runner Stone, extra.	
ft.	in.	£	s.	£	s.	£	s.	£	s.	£	s.
1	8	—	—	—	—	25	0	1	4	—	—
2	6	32	0	35	0	40	0	1	10	5	0
3	0	45	0	49	0	55	0	2	0	5	10
3	6	55	0	60	0	65	0	2	10	6	10
4	0	65	0	72	0	80	0	3	15	7	10

Table of Weights, Power Required, &c.

Diameter.		Approximate Weight.	Minimum Horse Power.	Approximate Quantities delivered per hour.	
				Fine Flour.	Coarse Meal.
ft.	in.	cwt.		bushels.	bushels.
1	8	10	2¼	2	4
2	6	20	2½	2½	7
3	0	36	3	3½	9
3	6	44	3½	4	11
4	0	50	4	4½	14

The 20 inch Mill, with French Burr Stones, the lower stone the runner, is very useful for grinding hard substances, such as samples of Coprolite, &c., as well as for grinding Grist.

This Mill is also fitted with the upper stone the runner, when it can be driven by man power where labour is abundant. It will grind two bushels of wheat per hour when worked by six men.

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CORN GRINDING MILLS

(CONTINUED.)

Clayton & Shuttleworth's Corn Grinding Mills (with Stones).

These Mills are well adapted for export, as the Frames can be taken to pieces and packed in a small space for shipment.

The Mitre Wheels are geared with wood, and work with the minimum of noise and friction.

Diameter.		Derbyshire Grey Stones.		French Bed Stone and Grey Runner.		French Stones.		Loose Pulley, extra.		Improved Crane to lift Runner Stone.	
ft.	in.	£	s.	£	s.	£	s.	£	s.	£	s.
2	8	40	0	45	0	50	0	2	15	6	0
3	0	50	0	55	0	60	0	2	15	6	0
3	6	60	0	65	0	70	0	2	15	6	0
4	0	70	0	78	0	85	0	2	15	6	0

With Derbyshire Grey Stones, six bushels of Barley per hour may be ground to fine meal; if only required to be kibbled a much greater quantity may be done. French Burr Stones are preferable and in most cases best suited for Agricultural purposes, as they are much harder than Derbyshire Stones, and do not require dressing so often.

The quantity of Wheat that can be ground with French Stones will average about four bushels per hour. For fine flour French Burr Stones are indispensable.

Clayton & Shuttleworth's Improved Flour Dressing Machines.

These Machines have fixed Mahogany Cylinders, covered with wire of varied meshes, in which brushes revolve rapidly and drive the meal or flour through the Cylinder, producing different qualities.

Diameter of Cylinder	18 inches	Large Size	£55 0 0
Ditto	15 inches	Medium Size	£42 0 0
Ditto	12 inches	Small Size	£30 0 0

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CORN GRINDING MILLS

(CONTINUED).

Ruston, Proctor & Co.'s Improved Portable Grinding Mills (with Stones).

All the working parts of the Single Mills are enclosed in Cylindrical Cast Iron Frames or Columns; the Stone Case, Hopper, and Stand are of Iron, and adapted to any climate.

They will grind from 3 to 10 bushels per hour, according to Diameter of Stones, condition of the Grain, and fineness of the sample required. They will pack in small compass, and are well adapted for export.

In the Combined Corn Grinding Mills any number of Pairs of Stones, up to six, may be placed in a continuous Frame with Iron Columns, and driven by one Lay Shaft, thus dispensing with the ordinary Overhead Motion, Pulleys, and Driving Bands.

A Lever is fitted to each pair of Stones so that any pair can be thrown out of gear at pleasure, without interfering with the others.

Prices complete for One Pair of Stones.

Diameters.	2 feet.	2ft. 8in.	3 feet.	3ft. 6in.	4 feet.
Fitted with Derbyshire Grey Stones	£26	£40	£50	£60	£70
Fitted with French Bed Stone and Grey Runner Stone...	£29	£45	£55	£65	£78
Fitted with French Burr Stones ...	£32	£50	£60	£70	£85

If with Loose Pulleys, extra £2 15s. If with Improved Crane, extra £6.

Richard Garrett & Son's Corn Grinding Mills (with Stones).

Single Mill.	32in. diam.	36in. diam.	42in. diam.	48in. diam.	54in. diam.
Fitted with Peak Stones...	£40	£50	£60	£70	£ 80
Fitted with French Burr Stones ...	£50	£60	£70	£85	£105
Without Stones	£36	£45	£52	£60	£ 70

If provided with Loose Pulley and Striking out Gear, extra £3 15s. If with Improved Crane, £6.

The 36, 42, 48, and 54 inch Mills are mounted on a strong Wood Carriage with Four Wheels, for travelling, at the following prices :—

36 inch Mill	£15 0 0
42 inch Mill	£17 10 0
48 and 54 inch Mills	£20 0 0

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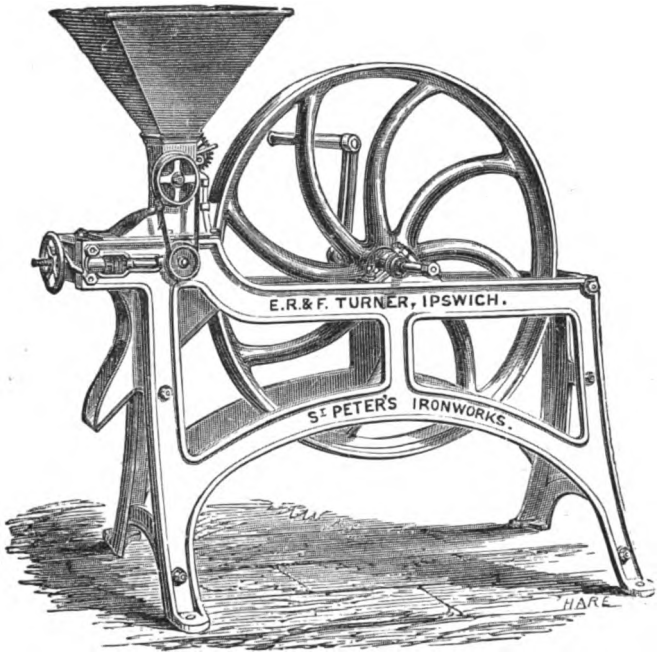
CRUSHING AND BRUISING MILLS,

WITH SMOOTH METAL ROLLERS.

E. R. & F. Turner's Corn and Seed Crushers.

FOR CRUSHING ALL KINDS OF GRAIN AND SEEDS, BOTH HOME AND FOREIGN, ESPECIALLY THOSE WHICH CANNOT BE TREATED BY MILL STONES.

Crushed Barley has been found as useful as fine meal for fattening purposes, while the cost of the former is only about one-tenth of the latter and no flour is lost.



A saving of about 25 per cent. is affected by feeding horses with crushed oats instead of whole ones.

Prices of Mills, Pulleys, Wearing Parts, and Cost of Packing.

No. of Mill.	Price.	Driving Pulleys, extra, each.	Springs, extra.	Small Roller Bearings, extra, per pair.	Scraper Plates, extra.	Cost of Packing.
	£ s. d.	£ s. d.	s. d.	s. d.	s. d.	£ s. d.
1	14 10 0	1 0 0	5 6	10 6	1 9	0 10 6
2	9 12 0	0 17 6	4 0	8 6	1 6	0 8 0
6	5 15 0	— —	3 0	4 6	1 3	0 5 6
7	7 12 0	0 15 0	4 0	8 6	1 6	0 7 0
8	22 15 0	1 5 0	8 6	16 6	2 6	1 2 6
11	4 10 0	— —	3 0	2 6	1 3	

Table of Dimensions, Power Required, Capacity, &c.

No. of Mill.	Diameter and Width of large Roll.	Diameter and Width of Driving Pulley.	Floor Space.	Cubic Feet Measurement for Shipment.	Weight packed.	Power required.		Speed per minute.	Bushels per hour.		
						Steam.	Horse.		Steam.	Horse.	Hand.
	inches.	inches.	ft. in. ft. in.	feet.	cwt.	HP.		revs.			
1	46 by 4	20 by 3¾	5 7 by 2 2	55	7	1	2	120	20	15	
2	38 by 3½	18 by 3¾	4 10 by 1 10	40	4½	—	1	120	12	9	6
6	18 by 3	— —	3 3 by 1 1	14	2½	Ha	nd P	ower	—	—	2
7	24 by 4	15 by 4	3 10 by 1 6	18	3½	—	1	100	—	6	4
8	48½ by 6	25 by 5	6 6 by 3 3	80	12	2½	—	120	40		
11	12 by 2½	— —	2 9 by 1 1	6	1½	One	Boy				

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CRUSHING AND BRUISING MILLS,

WITH SMOOTH METAL ROLLERS (Continued).

Woods, Cocksedge & Co.'s Roller Crushing Mills.

These Mills will crush Oats, Barley, Malt, Lentils, Linseed, Aniseed, Coriander Seed, &c., &c.

No. A 1. Crushing Mill for Steam, Water, or Horse Power; will crush about 35 to 40 bushels of Oats per hour £22 0 0

No. 1. Crushing Mill for Steam, Water, or Horse Power; will crush about 20 bushels of Oats per hour £15 15 0

No. 2. Crushing Mill for Steam or Horse Power, or for two Men; will crush about 10 bushels of Oats per hour £10 0 0

No. 7. Crushing Mill for Brewers' use; has Rollers 9 inches wide; will crush 60 bushels per hour £12 12 0

No. 4. Crushing Mill for small Brewers or Malt Sellers. A man and lad can crush about 14 bushels of Malt per hour; will also crush Linseed or Oats ... £ 7 4 0

No. 3. Crushing Mill for Hand Power, easily worked by a young man ... ... £ 5 10 0

Hunt & Tawell's Smooth Roller Bruising Mills.

Number of Mill.	Bushels of Oats per hour.				Price.
	One Man.	Two Men.	Two-Horse Gear.	Steam.	
No. 6. Mill for Hand or Power, on Iron Frame	2½	4	15 to 20	18 to 24	£ 9 10 0
No. 7. Mill for Hand or Power, on Iron Frame	4	6	18 to 22	20 to 30	£13 0 0
No. 1. Mill for Power only, on Iron Frame	...	...	20 to 25	25 to 35	£17 0 0
No. 3. Mill for Power only, on Iron Frame	...	...	...	35 to 45	£25 0 0

The Rollers in Hunt & Tawell's Mills are made of equal size; they are intended to bruise Oats, Linseed, Malt, Barley, or Maize.

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CRUSHING MILLS,

WITH FLUTED METAL ROLLERS.

RICHMOND & CHANDLER'S CORN CRUSHERS.

These Mills are fitted with two Diagonally Machine Fluted and Case-hardened Rollers, which have both a cutting and bruising action. They may be set at any distance apart by a single Screw in front of the Mill, which moves the front Roller in parallel slides, and adjusts the Rollers to bruise the corn to any degree of fineness.

The supply to the working Rollers can be readily increased or diminished by a Set Screw on the back of the feeder, and can be thus regulated to suit the strength of a boy. Suitable for Oats Beans, Peas, Barley, Maize, &c.

No. 1. Corn Crusher, will kibble a bushel in ten minutes. Size of Rollers, 7 inches by 3½ inches.

Price ... ... £ 5 10 0

No. 2. Corn Crusher, larger and stronger than the preceding, for Hand or Power; size of Rollers, 9 inches by 4 inches. Speed for power should not exceed 80 revolutions per minute.

Price ... ... £ 7 0 0

14 inch Pulley ... ...extra £ 0 14 0

No. 3. Corn Crusher, mounted on strong Iron Frame, and fitted with strong Brass Bushes, Loose Caps and Counter Shaft; Hand Wheel to regulate the feed; well adapted for Power. May be driven at 200 revolutions per minute. Size of Rollers, 11 inches by 6½ inches.

Price £11 7 6

16 inch Pulleys, each ... ...extra £ 0 16 0

No. 4. Corn Crusher, similar to No. 3, but larger and stronger. Size of Rollers, 14 inches by 8 inches.

Price £16 0 0

18 inch Pulleys, each... ... ...extra £ 1 0 0

No. 5. Corn Crusher, specially constructed for large requirements, Railway and Omnibus Companies and Carriers. Size of Rollers, 24 inches by 11 inches.

Price £30 0 0

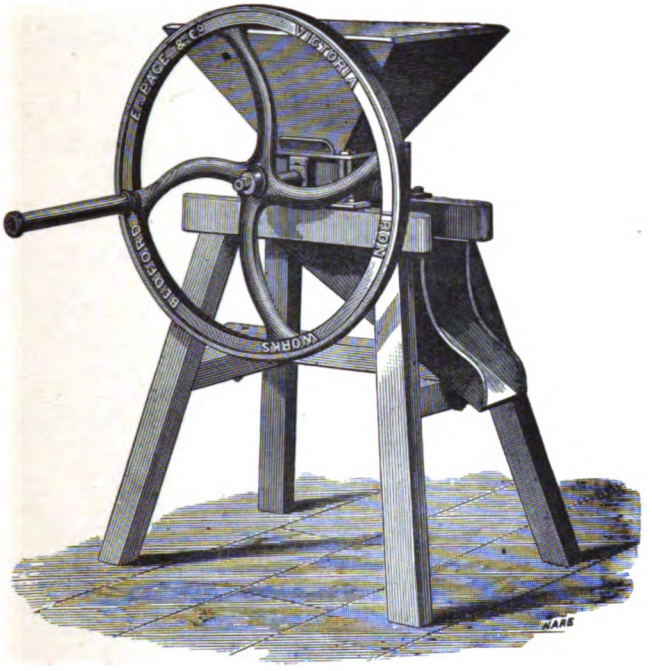
20 inch Pulleys, each ... ...extra £ 1 3 0

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CRUSHING MILLS,

WITH FLUTED METAL ROLLERS.

E. PAGE & Co.'s, CORN CRUSHING MILLS.



This Mill is for kibbling Indian Corn, Oats, Beans, Peas, and is fitted with a grooved and case-hardened Roller and Back Plate, which can be regulated to any distance apart by a single set screw at the end of the Mill so as to crush the grain to various degrees of fineness. The feed slide can also be adjusted to supply the corn in greater or less quantities to the Roller according to the amount of power available.

No 2 Mill mounted on Wood Frame, fitted with fine grooved and case-hardened Roller and Back Plate, and Regulating Feed £3 5 0

No. 2 A Mill mounted on Wood Frame, fitted with heavier Fly-wheel and two Handles £4 0 0

No. 3 Mill mounted on Wood Frame, fitted with Wheel and Pinion, fine grooved Roller and Back Plate, and Regulating Feed... ... ... £4 4 0

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GRINDING AND GRIST MILLS FOR HAND AND HORSE POWER.

Smith & Grace's Grist Mills for Hand Power.

These Mills are mounted on single Iron Columns; are strong, durable, and of simple construction.

The Rollers can be removed very readily by raising the upper part of the Mills, which are arranged conveniently for the purpose.

No. 1. Grist Mill for Hand Power, for grinding Barley or Wheat, bruising Oats, and kibbling Beans, Peas, and Maize, fitted with two Handles ... £6 0 0

Roller for Bruising Oats... ... ... extra £0 12 6

No. 2. Grist Mill for Hand Power, for grinding Barley or Wheat, and for bruising Oats, fitted with two Handles... ... ... £7 5 0

Roller for Bruising Oats... ... ... extra £0 12 6

No. 3. Grist Mill for Hand Power, for grinding Barley or Wheat, and for bruising Oats, fitted with two Handles... ... ... £4 0 0

Roller for Bruising Oats... ... ... extra £0 12 6

Smith & Grace's Grist Mills for Horse Power.

No. 8. Grist Mill for Horse Power, for grinding Barley or Wheat, also for kibbling Beans, Peas, and Maize, and for bruising Oats, adapted for one or two-Horse Power, and should be driven at a speed of 100 to 130 revolutions per minute.

Price, fitted with 14 inch Pulley or Gripe £7 15 0

Roller for Bruising Oats... ... ... extra £0 15 0

No. 9. Grist Mill for Horse Power, for grinding Barley or Wheat, or bruising Oats, adapted for two-Horse Power, and should be driven at a speed of 100 to 130 revolutions per minute.

Price, with 14 inch Pulley or Gripe £8 15 0

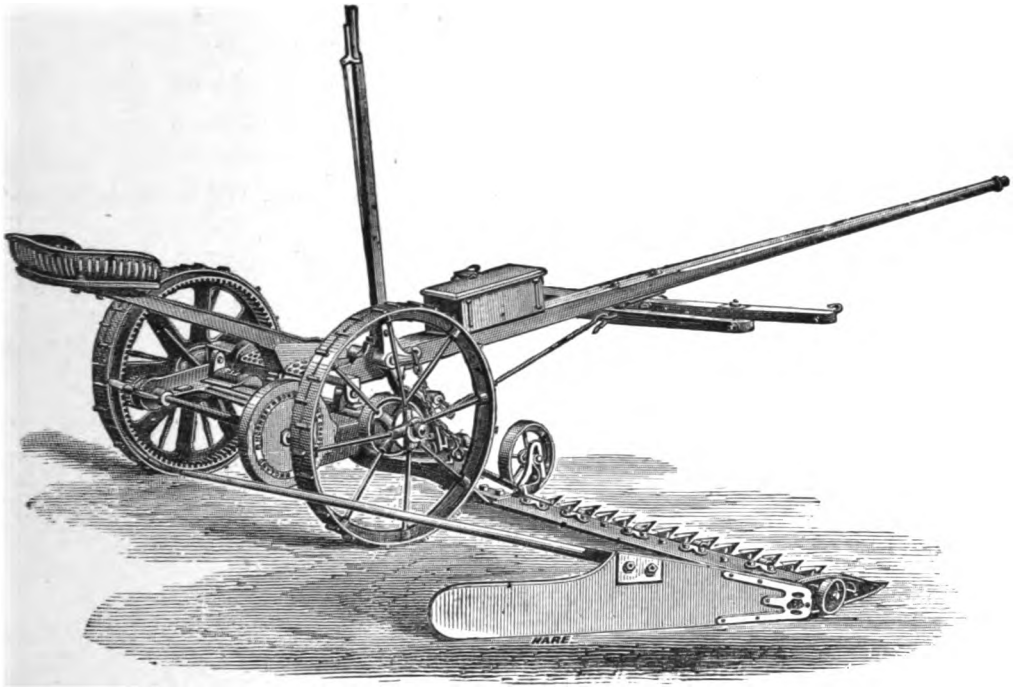
Roller for Bruising Oats... ... ... extra £0 15 0

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R. HORNSBY & SONS'

MOWING MACHINES.

Hornsby's "Paragon" Mowers gained the Royal Agricultural Society of England's First, Second, and Third Prizes at the Taunton Trials in 1875.



The above Engraving illustrates one of Hornsby's Patent "Paragon" Two Horse Mowers, with various recent improvements. The Frame of the Machine is strong and light; the Cutting or Finger Bar is brought more in line with the Road Wheel Axle so as to follow the inequalities of the land more readily, and is hinged so as to be turned up and secured by a spring catch conveniently for travelling. The Leverage for raising the Cutting Bar over the Swathes is also lighter than formerly.

The Connecting Rod is held in the heel of the Knife by a Spring Slide instead of a bolt and nut, thus dispensing with the necessity for using a spanner. A spring stop is used instead of the old joint pin, which holds the knife firmly, but allows it to be taken out instantly without unscrewing any nuts, and the Crank Pin is very accessible.

The Machine is put in and out of gear by a slight movement of the driver's foot. The fingers of the Cutting Bar are provided with Double Steel Cutting Plates, which allow the dirt to pass away readily without liability to clogging. All Bearings are provided with efficient oiling appliances, and all nuts are locked to prevent their shaking loose.

New Patent "Paragon O" Two Horse Mower, 4ft. 3in. cut—right hand; with Two Knives, Box of Tools, and small wearing parts... ... ... £19 0 0

New Patent "Paragon A" Two Horse Mower, 4ft. 3in. cut—right hand; with Two Knives, Box of Tools, and small wearing parts. Fingers 2½ inches apart £19 0 0

New Patent "Paragon N" Two Horse Mower, 4ft. 3in. cut—left hand; with Two Knives, Box of Tools, and small wearing parts... ... ... £19 0 0

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R. HORNSBY & SONS'

MOWING MACHINES

(CONTINUED).

Hornsby's New Royal Patent "Paragon" One Horse Mower is made with the Cutting Bar from 2ft. 9in. to 3ft. 3 inches long, according to size of Horses and nature of the work.

It is constructed upon the same principle as the Two Horse Mower, and has been thoroughly tested in difficult crops.

New Patent "Paragon" One Horse Mower, 3 feet 3 inches cut, and under; with Two Knives, Box of Tools, and small wearing parts £17 10 0

New Patent "Paragon" One Horse Combined Mower and Reaper, 3ft. 3in. cut, and under; with Two Knives £20 0 0

HORNSBY'S

ROYAL PATENT "PARAGON" COMBINED MACHINE.

This Machine is the same as the "Paragon" Two Horse Mower, with the addition of the extra parts required to make it into a Back Delivery Reaper.

The inconvenience of changing the Pole Plate and Divider Shoe when attaching the Reaper parts is now done away with. No additional Pole Plate is required; the necessary change of position being effected by simply sliding the Pole Plate along the Patent Bar provided for that purpose, and the alteration is easily and quickly made. The Divider Shoe for Reaping is made to fit on over that used for Mowing. By means of the Wrought Iron jointed Foot Lever, the Wood Grating can be folded over on to the top of the Cutters and Finger Bar, and the Bar can then be turned up for travelling with as much facility as in the case of a Mower.

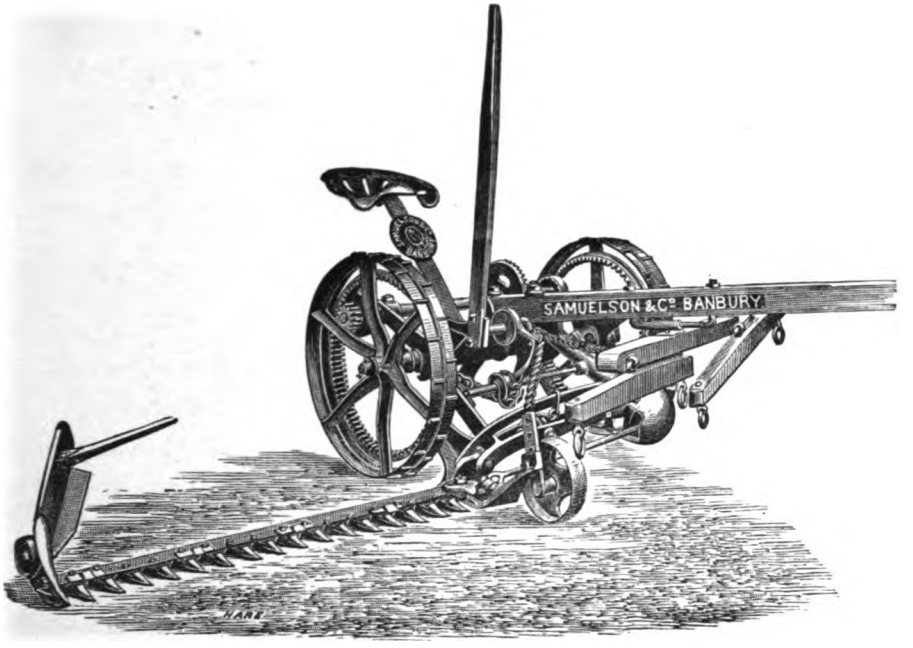
New Patent "Paragon O," "A," or "N" Two Horse Combined Mowers and Reapers, with Back Delivery, 4ft. 3in. cut—with Two Knives £22 10 0

Pair of Wood Shafts or Tubular Iron Shaft, fitted to Pole, extra 15/-.

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SAMUELSON & Co.'s

PATENT BALANCE DRAUGHT MOWING MACHINES.



These Mowers are well balanced and do not weigh on the horses necks; the Cut is inclined, **which** enables them to cut very close to the ground, and to deal effectually with laid and twisted **grass.**

The Travelling Wheels are both geared.

The Cutter Bar is fitted with New Patent Welded Steel and Iron Fingers of great strength **and toughness,** with Steel Edges and Wrought Iron Centres, which wear to a keen edge and a flat **cutting** surface by friction with the knife.

All Bearings have Best Gun Metal Bushes and improved means of lubrication.

New Patent Two Horse "Gem" Balance Draught Grass Mower "G," with Two Knives, Tools, and small wearing parts. Right hand cut £18 10 0

Patent Two Horse Balance Draught Grass Mower "P," with Two Knives, Tools, and small wearing parts. Left hand cut £18 10 0

One Horse Grass Mower "Y," with Two Knives, Tools, and small wearing parts £17 0 0

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SAMUELSON & Co.'s

PATENT BALANCE DRAUGHT COMBINED MOWER AND REAPER "P,"

WITH BACK DELIVERY.

As a Mower, this Machine is identical with that described on the preceding page, and the utmost care has been taken to make the change to a Reaper very rapid and easy. The Pole Bracket slides on the Main Axle, and is shifted away from the crop for reaping, and there secured in a moment.

The Lifting Lever retains such a position that the driver has equal control over the Cutter Bar when reaping as when mowing.

The Raker's and Driver's Seats are arranged to balance the Machine when reaping, and both men are in the best possible place for their work. The whole of this attachment has been so carefully considered so as to render this Combined Machine as perfect as possible both in respect to efficiency and convenience of handling.

Combined Mower and Reaper "P," with Back Delivery, Two Knives, Tools, and small wearing parts, and fitted with New Patent Open Pattern Welded Steel and Iron Fingers £22 0 0

SAMUELSON & Co.'s

ONE HORSE COMBINED MOWER AND REAPER.

The One Horse Grass Mower "Y" can be supplied with a Slatted Platform, large off-side Shoe, Corn Dividing Iron, &c., thus converting it into a thoroughly efficient Reaper.

Messrs. Samuelson & Co., however, recommend the use of Finger Beams and Knives 3ft. 6in. long for Grass, and about 4 feet long for Grain.

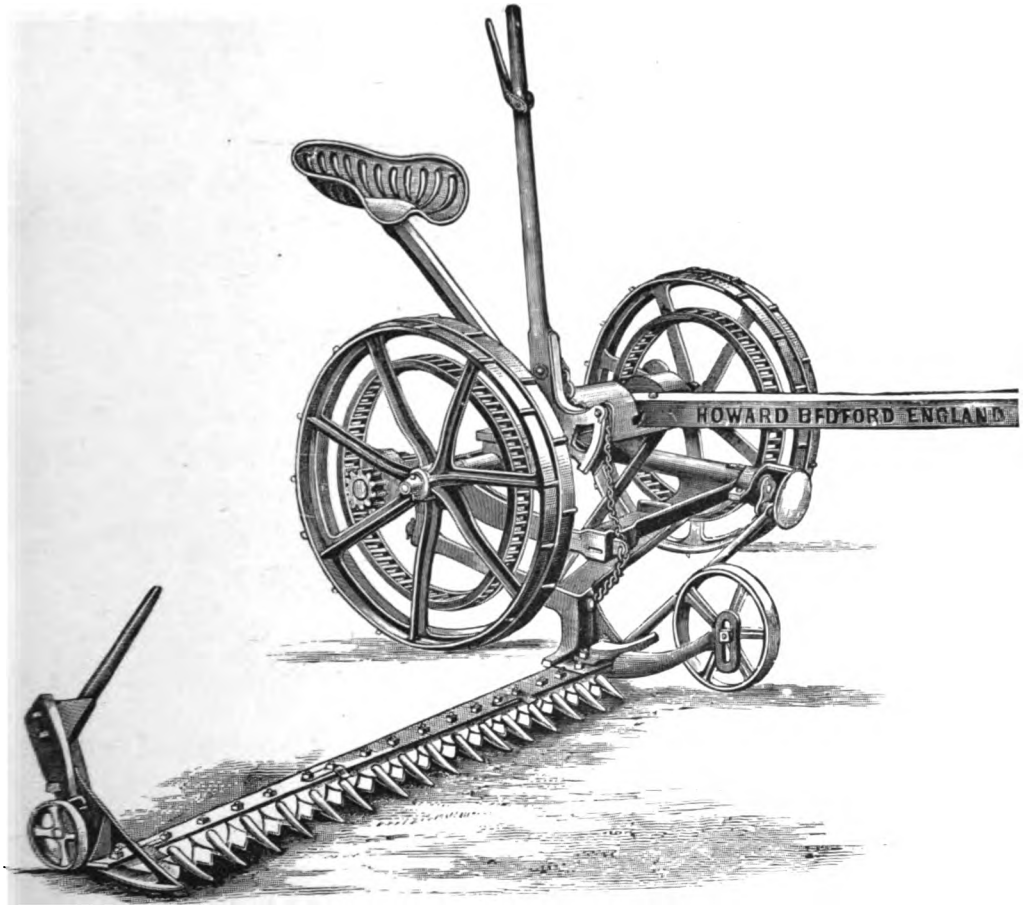
One Horse Combined Mower and Reaper, with ordinary Finger Beam and Two Knives £19 0 0

One Horse Combined Mower and Reaper, with additional long Beam and two additional Knives... ... ... £23 0 0

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HOWARD'S

NEW PATENT "SIMPLEX" MOWER.



In the "Simplex" Mower the Gearing of the Driving or Travelling Wheels is open, and not liable to get clogged with the cut grass.

The Cutter Bar is attached to an improved sledge so that the framework of the Machine works perfectly well over ridge and furrow, and is at the same time under the complete control of the driver by means of a Hand Lever conveniently placed for that purpose.

The Machine works smoothly, with the least noise and rattle, and is balanced on the Driving Wheels to relieve the horses of unequal strain.

The Connecting Rod gives a direct thrust to the Knife.

"Simplex" Mower, with Two Knives, and Tool Box containing requisites for use in the field £18 10 0

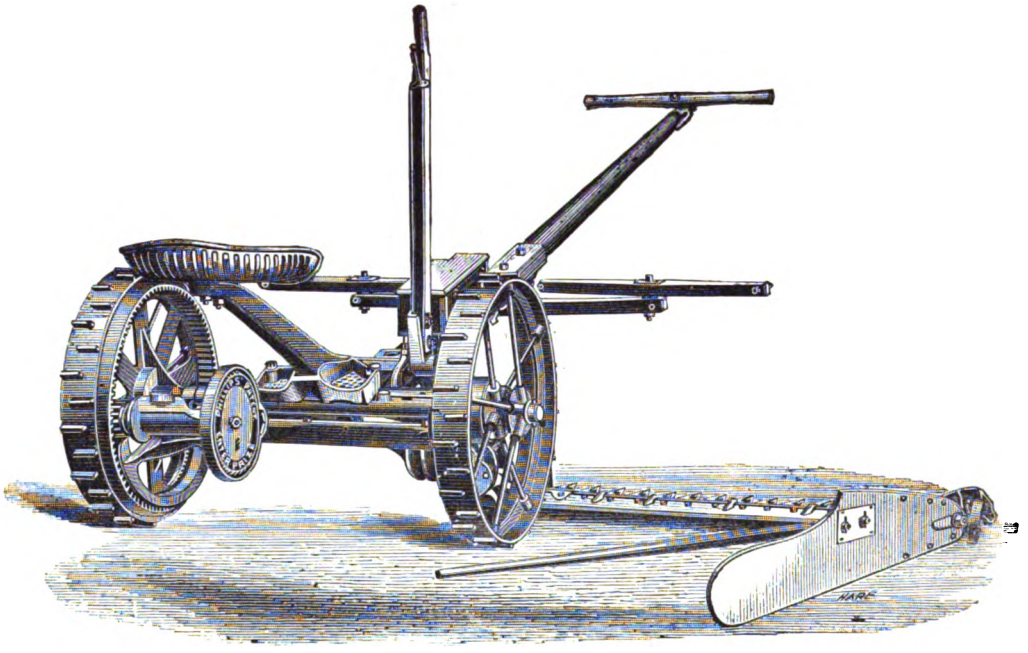
Reaping attachments for converting the Mower into an effective Manual or Back Delivery Reaper... ... ...extra £3 0 0

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HANDYSIDE & Co.'s

TWO HORSE "ENTERPRISE" MOWER,

(PHILLIPS' PATENT).



The Mower illustrated above is carried on Springs which materially reduce vibration and the general working strain on the Machine, and make it work very silently and smoothly.

The Main Frame of the Machine, which carries the Gearing, balances on the Axle, to which the Pole is simply hinged so as to rise and fall freely. The Driver's Seat is rigidly attached to the Pole so that the weight of the driver balances that of the Pole, and relieves the horses' necks of all weight.

The position of the Pole can be readily varied by shifting the Pole Plate on the Axle Tube.

The draught is taken from the front of the Main Frame, which eases the Cutter Bar over any inequalities in the land.

The Crank is fitted with a patent self-lubricating arrangement, and the Spindle is made hollow forming a reservoir for oil.

Two Horse "Enterprise" Mower, with Two Knives, and Tool Box containing all Field Requisites £19 0 0

Reaping Attachment for converting the Mower into a Back Delivery Reaper ... ... extra £ 3 10 0

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HANDYSIDE & Co.'s

ONE HORSE "ENTERPRISE" MOWER,

(PHILLIPS' PATENT).

This One Horse Mower is similar in construction to the Two Horse Machine illustrated on the previous page, but proportionately lighter throughout.

The Main Frame is carried on India Rubber Springs, which reduce vibration in work, and prevent damage from jolting over hard roads.

The Crank Disc is supplied with oil from a reservoir in the Spindle, which prevents frequent stoppages for oiling.

One Horse "Enterprise" Mower, with Two Knives, and Tool Box containing all Field Requisites	£17 10 0
Reaping Attachment for ditto, with Back Delivery ... ... extra	£ 2 10 0

POWELL BROTHERS & WHITAKER'S

TWO HORSE "CROWN" MOWERS.

The Travelling Wheels of these Mowers are fitted with Wrought Iron Arms, which are stronger and lighter iron than Cast Iron.

The Finger Beam combines the advantages of a close and open one, the Bars having slots, and the Knives open sections, which allow foreign substances to fall through and give perfect freedom to the working of the knife.

The principal wearing parts are made entirely of Malleable Iron, and the Bearings are fitted with Oil Cups to exclude dirt.

The Knife can be removed without requiring the use of a spanner.

Two Horse "Crown" Mower	£18 10 0
Ditto ditto Combined Mower and Back Delivery Reaper	£22 10 0
One Horse "Crown" Mower	£17 10 0
Ditto ditto Combined Mower and Back Delivery Reaper	£19 10 0

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WALTER A. WOOD'S

IRON FRAME MOWER.

This Mower was brought out in 1873, and little or no change has been made in it since its introduction. It has met with a most extensive sale in all parts of the world.

The Machine is strong and durable, and the draught light; the weight is removed from the horses' necks.

The Cutter Bar is of Cold Rolled Iron, and is in front of the Travelling Wheels; the Guards of Malleable Iron with Steel Plates.

The Mower has few Bolts or Nuts.

Price of Two Horse Iron Frame Mower, with Two Knives and Extras;
4ft. 3in. cut... ... ... £19 0 0

WALTER A. WOOD'S

COMBINED IRON FRAME MOWER AND BACK DELIVERY REAPER.

This Machine as a Mower is identical with that described above. The Reaping Attachment is simple and efficient, and constructed to turn up for travelling.

The speed of the Knife is the same as in the Mower; a very important point where the undergrowth is heavy.

Price of Combined Mower and Reaper, with Two Knives and Extras £22 10 0

WALTER A. WOOD'S

NEW ONE HORSE MOWER.

This is a very compact Machine; the Frame is of Iron; all Gearing has been removed from the Travelling Wheels, reduced to the smallest possible compass, and protected from dirt and dust by a cover. The draught is very light.

Price, with Two Knives and Extras £17 10 0

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BURGESS & KEY'S MOWERS.

The No. 8 Mower has the Knife in line with the Main Axle of the Driving Wheels and the Crank level with the Knife, an arrangement which enables the Finger Bar to travel over uneven surfaces without any danger of the finger points catching the ground.

The Machine is balanced so that no weight falls on the horses' necks, and the draught is light.

A new patent arrangement is used for putting in and taking out the Knife at the back instead of drawing it through the Fingers.

The points of the Fingers can be raised or depressed while the Machine is in motion by means of a Lever conveniently placed under the driver's hand.

The Finger Bar is hinged to allow considerable rise and fall, so that the action of the Machine is not interfered with when the Driving Wheels run in a furrow.

All the Bearings of the Crank Shaft and Bevil Wheel Spindle are contained in one small bracket, and they are readily renewed when worn out. The Bevil Gearing is enclosed in a cover to protect it from dirt. The Bearings are supplied with Lubricators. The Fingers are of malleable iron, steel plated, or of cast iron, with chilled cutting edges, open under the back of the Knife. The Seat is provided with a spring, which saves the driver some discomfort.

Price of No. 8 Two Horse Mower, with Two Knives and extras, including

Malleable Spanners £20 0 0

Price of One Horse Mower, with Shafts, Two Knives, and extras, including

Malleable Spanners £17 5 0

Back Delivery Reaper Attachment to the above ... ...extra £ 3 10 0

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BURGESS & KEY'S MOWERS.

The No. 6 Mower has exceptionally large Travelling Wheels which give great steadiness to the Machine and light draught.

For road transit the Travelling Wheels only revolve, the whole of the gearing being put out of work.

The Fingers are of malleable iron, steel plated, or of cast iron, with chilled cutting edges, open under the back of the Knife.

The Knife is withdrawn at the back of the Fingers instead of being passed through them.

The Driver's Seat is provided with a spring, which materially reduces the jolting and vibration.

Price of No. 6 Mower, with Two Knives and extras £20 0 0
Back Delivery Reaping Attachment for ditto ... ... £ 3 10 0

"N L" MOWER (PATENTED).

In this Machine the working parts are all contained in one bracket, which carries the Cutter Bar in advance of the Main Wheels, and is adjusted to the height of cut by a wheel at each end, in the usual way.

The Crank is nearly level with the Knife, which takes out at the back instead of being drawn through the Fingers.

The Driving Wheels only revolve in travelling, all others being put out of gear.

The draught is so arranged that the weight is taken off the wheel in front of the Cutter Bar, thus giving it a tendency to rise over obstacles.

The Bearings are efficiently lubricated.

Price of Patent "N L" Mower, with Two Knives and Box of Tools £18 0 0

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PICKSLEY, SIMS, & Co.'s

"BALANCE STANDARD" MOWERS.

The Framework of these Mowers is constructed wholly of Iron, and although light and compact in appearance, possesses great strength and durability.

The Finger Bar is attached to the under frame by means of a double-jointed hinge bar, which allows it to follow the inequalities of the land with freedom.

The Machine is thrown out of gear by the driver's foot; the Hand Lever raises the Cutting Bar to pass over obstructions, and the "Tipping Lever" is placed in a convenient position to raise or lower the points of the fingers as required.

The Fingers are fitted to the top of the Bar, thus leaving the under surface quite smooth and free from projections.

The Driver's Seat is attached to the end of the Pole and can be moved backward or forward as required, so that the Machine may be perfectly balanced and thereby prevent any weight pressing on the horses' necks.

The adjustment is effected by simply slackening the bolts, which are used in attaching the Pole to the Machine, and sliding the Pole in either direction to the required position, and tightening up the bolts.

The Under Frame, carrying the Knife Bar and part of the Gearing, can be shifted laterally on the cross arm of the top frame to the extent of six inches by the removal of a single bolt.

The Knife Bar is consequently projected six inches further beyond the Pole, allowing more room for the horses and space for the reaping attachments. This alteration brings another pair of wheels into gear which reduce the speed of the knife for reaping, but an internal Spur Wheel can be attached to the reaping side of the Machine, if required, to give the same speed for reaping as for mowing.

The change from reaping to mowing can be effected by an ordinary labourer in two or three minutes.

Two Horse "Balance Standard" Mower complete, with Two Knives, Box of Tools, and supply of small wearing parts, to cut on the right or left hand side £18 10 0

Two Horse "Balance Standard" Combined Mower and Back Delivery Reaper, with Two Knives, Box of Tools, and supply of small wearing parts, to cut on the right or left hand side £22 0 0

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PICKSLEY, SIMS, & Co.'s

"NOVELTY" TWO HORSE MOWERS.

The Travelling Wheels of these Mowers are fitted with Wrought Iron Spokes and are interchangeable. The Crank Cover can be taken off and replaced in a moment, without moving the Crank Wheel or Connecting Rod.

A malleable iron Mowing Shoe is provided, which ensures perfect cutting at the end of the Cutting Bar, which has a double hinge joint, enabling the Knife to adapt itself to irregularities of the ground.

The Fingers are open, of best malleable iron, fitted with steel plates, and are attached to the top of the Cutting Bar; the under surface being quite smooth and reducing the liability to choke almost to an impossibility.

The Draught Pole is fitted underneath the Gear Frame, and the draught is concentrated in the centre of the Machine.

When required for reaping the Pole is moved into another socket, which allows room for the horses to work clear of the standing crop.

Lock Bolts and Nuts are used upon these Machines; neat and efficient Oil Cups are attached to all bearings.

"Novelty" Two Horse Mower, complete with two Knives, Box of Tools, and supply of small wearing parts, to cut upon either the right or left hand side.

Price **£18 10 0**

"Novelty" Two Horse Combined Mower and Back Delivery Reaper, complete with two Knives, Box of Tools, and supply of small wearing parts, to cut upon either the right or left hand side.

Price **£22 0 0**

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PICKSLEY, SIMS, & Co.'s

PATENT "MODEL" ONE HORSE MOWER.

This Mower differs somewhat from the "Standard" Mowers and Reapers; but while possessing all the advantages of those Machines, it contains some additional improvements.

"Model" One Horse Mower, with two Knives, Box of Tools, and small wearing parts, to cut either on right or left hand side £17 0 0

"Model" One Horse Combined Mower and Back Delivery Reaper, with two Knives, Box of Tools, and small wearing parts, to cut either on right or left hand side... ... . £19 0 0

SAMUELSON & Co.'s

PATENT BALANCE DRAUGHT MOWER AND REAPER "THE SCOTSMAN,"

WITH FORE-CARRIAGE SWIVEL WHEEL.

This Mower is a modification of Samuelson's "Balance" Draught Mower and Reaper, and is introduced to meet the requirements of agriculturists in districts where seeds and artificial grasses are extensively cultivated; the front Swivel Wheel turning while at work without injuring the surface of the ground.

Price, with two Knives, Box of Tools, and small wearing parts, and fitted with Patent Open Pattern Welded Steel and Iron Fingers. Width of cut 5 feet £23 10 0

Harness for Mowing and Reaping Machines.

The harness should consist of a good set of double harness with traces, but without breechings. Each set of harness should have a back-band, a light belly-band, a martingale, and a strong pair of pole straps.

The pole straps should hold the cross bar well up to the horses' collars; the belly-band should go from trace to trace, and one end of the martingale must be buckled round the cross bar and the other to the belly-band.

The pole is thus prevented from rising in backing the Machine, which it will do if no martingales are used.

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BAMLETT'S

No. 1 WOOD FRAME TWO HORSE MOWER.

This Machine was brought out in 1863, and won the two principal Prizes at the Yorkshire and Lancashire Trials in that year. It is a strong and serviceable Machine, capable of dealing with heavy crops, and works well on uneven land.

Price of No. 1 Wood Frame Two Horse Mower, with Front Swivel Wheel, Two Knives, Tools, and Pole Straps, and fitted with Bamlett's New Patented Finger, made of Wrought Iron and faced with Edge Tool Steel, both on the upper and under side of Finger Slot, giving great strength and durability and a clean easy cut. Width of Cut 4ft. 6in.... £24 0 0

BAMLETT'S

No. 1 WOOD FRAME COMBINED TWO HORSE MOWER AND BACK DELIVERY REAPER.

This Machine is the same as the Mower described above, but fitted with the Reaper Attachment, with Patent Change Wheel Arrangement for reducing the speed of the Knife.

The Draught Pole is jointed to the Machine, and is made to slide on its joint, to give more room between the Pole and the standing corn, for the near side horse to walk in.

Price of No. 1 Wood Frame Combined Two Horse Mower and Reaper, with Double-speed Gearing, Two Knives, and Pole Straps, and fitted with the New Patent Fingers. Width of Cut, 4 feet 6 inches £28 0 0

Extra Knives ... ... each £ 0 16 0

Mower and Reaper Knife Sharpening Stand ... ... £ 0 10 6

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BAMLETT'S

No. 2 IRON FRAME TWO HORSE MOWER.

This is a strong Machine, constructed on the same principle as the Wood Frame Mower, and suitable for any crops. It has a Swivel Wheel in front which facilitates turning, and also takes the weight from the horses' necks.

The leverage for raising the Knife Bar is well arranged, and the position of the Knife can be altered while in motion.

The Bearings are well lubricated. The Patent Fingers are of wrought iron, faced with steel on the upper and sides of Slot.

Price of Iron Frame Two Horse Mower, with two Knives, Tools, and Pole Straps complete, width of cut 4 feet 3 inches £22 0 0

Extra Knives, each, 16/-.

BAMLETT'S

IRON FRAME TWO HORSE COMBINED MOWER AND BACK DELIVERY REAPER.

This Machine is similar to the preceding, but fitted with Reaping Attachment, with quick and slow speed Gearing.

Price of Iron Frame Two Horse Combined Mower and Reaper, with two Knives, Tools, and Pole Straps, and Patent wrought iron Fingers faced with steel. Width of cut 4 feet 3 inches £26 0 0

Extra Knives, each, 16/-.

BAMLETT'S

No. 3 LIGHT IRON FRAME MOWER.

In this Machine the Gearing and Frame are made lighter than in the Mowers previously described. The Fingers are made of wrought iron, faced with steel on both sides of the Finger Slot.

Price, with two Knives, Tools, and Pole Straps... ... ... £20 0 0

Bamlett's Light Iron Frame Combined Mower and Back Delivery Reaper fitted with quick and slow speed Gearing, two Knives, Tools, and Pole Straps... £24 0 0

Bamlett's New No. 4 Mower, with two Knives, Pole Straps, Oil Tin, Spanners, &c., (awarded the Highest Prize for English Mowing Machines at the Paris Exhibition, 1878) £20 0 0

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HARRISON, McGREGOR, & Co.'s

"ALBION" TWO HORSE MOWERS.

These Mowers are simple in construction, strong and durable, and easily handled. They cut closely and evenly, are not liable to clog, and have a light draught.

The Finger Bars are fitted with improved steel lined malleable iron Fingers of a new open pattern, combining a perfect shear cut with the greatest possible strength, while their improved form renders them less liable to clog in old meadow or other difficult crops.

The Machines are also fitted with an improved arrangement by which the points of the Fingers can be instantly raised or lowered while at work, so as to pick up laid or tangled crops or to cut over uneven ground.

An improved malleable iron Mowing Shoe, inlaid with a steel plate, is provided for the Knife to cut against; also a new form of Knife and Knife Heel Guide, with improved Connecting Rod and Knife Holder.

Price of "Albion" Two Horse Mower, with Two Knives, Box of Tools, and usual extras. Right or left hand cut £19 0 0

HARRISON, McGREGOR, & Co.'s

"ALBION" COMBINED TWO HORSE MOWERS AND REAPERS.

In these Machines all weight is removed from the horses' necks, and there is no side draught.

The Reaping Attachment is very simple and efficient.

Price of "Albion" Two Horse Combined Mowers and Reapers, with Back Delivery, with Two Knives, Box of Tools, and usual extras. Right or left hand cut... ... ... £22 10 0

HARRISON, McGREGOR, & Co.'s

"ALBION" ONE HORSE MOWERS.

These Machines are made on the same general principle as the Two Horse Machine, but lighter throughout.

Price of One Horse Mower, 3ft. 3in. cut, right or left hand £17 10 0

Price of One Horse Combined Mower and Reaper, 3ft. 3in. cut, right or left hand £20 0 0

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WURR & LEWIS'S MOULDING MACHINE,

FOR CIRCULAR OR IRREGULAR WOOD MOULDINGS.

This Machine will cut Straight or Circular Mouldings with great speed and accuracy. The Spindle is made to rise and fall, and will revolve at any speed with great steadiness, and cut Mouldings cleanly and rapidly.

Circular Moulding Machine	£18 0 0
Countershaft, with two Standards, and Fast and Loose Pulleys	£ 7 10 0

WURR & LEWIS'S

IMPROVED WOOD MOULDING AND PLANING MACHINE.

The timber is fed to this Machine by four Calender Rollers driven by direct Tooth Gear, and is moulded or planed on all its surfaces at one time by four revolving blocks having Cutters of the shapes and kinds required.

The two top rollers rise and fall in curved guides, struck from the centre of the wheel by which they are driven, so that the wheels always work in gear, and, at the same time, allow timber of any thickness up to 12 inches by 4 inches to pass through.

Boards are planed by fixing Plane Cutters in the top and bottom blocks, and the edges are planed, or tongued and grooved, by suitable Cutters, fixed to the side heads or blocks.

Boards are planed and moulded at the rate of from 10 feet to 30 feet per minute.

	Inches.	Power required.	Price.
No. 1 Machine, to plane or mould ...	12 by 4 ...	5 HP. ...	£190 0 0
No. 2 Ditto ditto ...	9 by 3 ...	4 HP. ...	£120 0 0
No. 3 Ditto ditto ...	7 by 5 ...	3 HP. ...	£ 95 0 0
No. 4 Machine, to plane 14 inches on one side	...	3 HP. ...	£ 90 0 0

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WURR & LEWIS'S

IMPROVED ROUNDING MACHINE,

FOR ROUNDING BROOM HANDLES, CURTAIN POLES, AND OTHER SIMILAR ARTICLES, OUT OF SQUARE OR IRREGULAR SHAPED WOOD.

The wood, after being sawn, is placed between the Bevel Feed Rollers, which feed it through the hollow Mandril, at the end of which is a chuck carrying cutters which reduce it to the size required.

Three Cutter Heads and Cutters are supplied with the Machine.

Price of Rounding Machine £20 0 0

WURR & LEWIS'S

IMPROVED GENERAL JOINER.

This Machine will saw wood up to eleven inches deep, plane any thickness up to seven inches wide at one cut, and eleven inches by reversing; will stick Mouldings up to four inches wide, and edge several thicknesses of Boards at once up to nine inches wide; cut single or double Tenons, and bore a mortise from outer end of Spindle.

The Countershaft is fitted with Fast and Loose Pulleys, Driving Pulley with quick and slow speed, and Striking Gear.

The Frame is of cast iron, truly planed; all the details are of the best materials; and the workmanship throughout is of the best description.

General Joiner complete, including one 26 inch Circular Saw, two 18 inch Tenoning Saws, one 10 inch Drunken Saw, with Collars for cutting any width of groove; one 12 inch Saw, for shouldering and cross cutting; one Moulding Block with full set of Bolts, one Finger Plate, and three sets of Moulding Cutters; one set of six Patent Augers; one long Fence with Pressure Rollers and Binding Rollers, for squaring up, &c.; One Tenoning Cramp; one Shouldering, Cross Cutting, and Mitreing Slide; one Angle Cutting Fence, and one set of Spanners and handles £70 0 0

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WURR & LEWIS'S

PATENT COMBINED GENERAL JOINER AND BAND SAWING MACHINE,

WITH COUNTERSHAFT FOR STEAM POWER.

This Machine is constructed entirely of iron, with all the working surfaces truly planed; all the Bearings have adjustable gun-metal steps, and the working parts are well fitted and finished.

It is made to take a Circular Saw 27 inches in diameter, and will cut boards up to eleven inches deep.

The Band Saw will cut wood up to 8 inches thick, and has 27 inches clear space between the Saw and the Column.

The Circular Saw Spindle rises and falls, and is made long enough to take a Moulding Cutter Block, Grooving Saws, Tonguing and Rebating Irons, &c., &c. Loose Collars are provided for spacing Tenon Saws, for Tenons ¼ inch, ½ inch, and ¾ inch thick.

The Machine will stick mouldings, plane any thickness up to 7 inches wide at one cut, and 11 inches by reversing; edge several thicknesses of boards at one time up to 9 inches wide, cut single or double Tenons, and bore or mortise from outer end of Saw Spindle.

A Countershaft is provided, with Striking Gear so arranged that the Circular Saw and Band Saw can be driven separately or both at once.

The end of the Saw Spindle is bored and fitted with Set Screw to carry Auger.

Combined General Joiner and Band Sawing Machine complete, with tools as described £90 0 0

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WURR & LEWIS'S

IMPROVED GENERAL JOINER.

FOR PLANING, MOULDING, TENONING, TONGUING, GROOVING, REBATING, AND SAWING BY CIRCULAR, BAND, OR FRET SAW.

The advantage of this Machine consists in the facilities for working each part separately or together, being so constructed that the workman can change from Planing to Moulding, Sawing, Tenoning, or Boring, without having to remove or add to any part of the Machine; or, if required. all parts may be worked at one and the same time, which would employ three men.

This Machine comprises :—

1st.—A rising and falling Spindle Circular Saw Bench, for plain or bevel sawing, cross cutting, grooving, and rebating.

2nd.—A Moulding and Planing Machine to work any length of wood.

3rd.—A complete Tenoning Machine.

4th.—An Endless Band Sawing Machine, with Canting Table and improved Spring Compensation Tension Apparatus.

No.	Depth will saw.	Will Plane and Mould.	Average Power required.	Price.
1	7 inches	7 inches by 4 inches	6 HP.	£125 0 0
2	11 inches	11 inches by 4 inches	8 HP.	£200 0 0

In the No. 2 Machine the Saw Bench has a Self-acting Feed, and a Circular Moulding Apparatus, and it will plane or mould four sides at one operation.

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WURR & LEWIS'S

IMPROVED TENONING MACHINE,

FOR JOINERS, BUILDERS, AND CABINET MAKERS.

In this Machine the wood requiring to be tenoned is fixed against a fence, and held down by a Hand Lever on a cast iron Sliding Table covered over with wood; this Table works on two cast iron Standards, which are firmly fixed to the Bed Plate of the Machine.

The Table is fitted with Adjustable Stops, thus saving the workman's time in setting out stuff to be tenoned.

There are two Cutter Heads, with rising and falling motion, to suit the various depths of tenons required to be cut; each Cutter Head is adjustable on the Spindle, and is fitted with Shouldering Irons so as to cut a clean shoulder.

All parts of the Machine are firmly fixed to the Bed Plate, making it perfectly self-contained.

A Scribing Apparatus can be fitted to this Machine.

A set of Cutters, Striking Gear, and Spanners are included.

Tenoning Machine to cut Tenons 3 inches long £50 0 0

Average Power required, 1-Horse Power.

IMPROVED TENONING MACHINE,

WITH SCRIBING APPARATUS.

This Machine will cut single or double Tenons 5 inches long. It is fitted with a Vertical Spindle, for scribing, shouldering, and cutting double tenons.

The Cutter Spindles are made of steel, and run in Bearings of gun-metal. The Blocks are fitted with a special form of Cutter, which is quite flat, and is therefore as easily sharpened as an ordinary adze iron.

Each Cutter Head is driven separately from the Countershaft fixed on the Machine. Shelving can be trenched to any required length. The bottom Tenoning Head can be removed without raising the Spindle.

The timber to be worked is fixed on a cast iron Sliding Table, and held down by a Lever close to the Cutter Heads.

The whole Machine is mounted on a strong cast iron Bed Plate.

Tenoning Machine, with Scribing Apparatus, to cut Tenons 5 inches long ... £70 0 0

Average Power required, 2-Horse Power.

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WURR & LEWIS'S

MACHINE FOR PLANING, JOINTING, TONGUING, GROOVING, & MOULDING WOOD.

This Machine is designed expressly for Planing, Jointing, Tonguing, Grooving, Rebating, Thicknessing, and Moulding all kinds of timber, at speeds varying from 30 to 60 feet per minute.

The timber is fed through the Machine by means of large Calender Rollers, so arranged that the top ones may be raised or lowered by means of a Hand Wheel and Screw to suit any thickness. It can be worked on all four sides at once, or separately.

The Underside, after having the rough surface adzed off by Revolving Cutters, is planed to a smooth surface by fixed plane irons. The edges are worked by Revolving Cutters fixed on two Vertical Cutter Blocks, which plane, rebate, tongue, or groove them, and the timber is reduced to an even thickness by Cutters fixed on the top Cutter Block.

The Machine is constructed throughout in the most substantial manner, and the mechanical details have all the most recent improvements.

No. 1. For timber up to 12 inches by 4 inches, 5-Horse Power £225 0 0

No. 2. For timber up to 14 inches by 5 inches, 6-Horse Power £300 0 0

WURR & LEWIS'S

IMPROVED MORTISING & BORING MACHINE.

This Machine will cut mortises 6 inches deep, and take wood upon the Table 16 inches by 8 inches.

The Chisels are of an improved shape, and are reversed by a simple and accurate arrangement. The Tool Holder can be readily adjusted to varying thicknesses of wood requiring to be mortised.

Price of Mortising Machine, including eight Chisels and one Core Driver ... £14 14 0

Boring Arrangement and six Augers £1 1 0

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WURR & LEWIS'S

IMPROVED VERTICAL TIMBER FRAMES,

WITH RACK FEED.

These Frames are constructed to convert any kind of round or square timber into Planks, Boards, Deals, or Panelling.

The tree or log to be sawn is placed on a cast iron Rack Carriage and held at each end by adjustable Clips, which have a lateral motion to enable them to follow the curve of a log. The iron Rack Carriage is worked forward by a pinion, driven by an improved silent Feed Motion.

The timber is supported immediately in front of, and behind the Saws, by two rollers, which can be raised or lowered to follow the irregularities of the under surface. The Saws have thus a firm resistance to cut against, and the Frame is saved from many severe strains to which it would otherwise be subjected.

The Crank Shaft is very strong, and the Connecting Rod is carried half way up the Swing Frame on each side, to obtain the advantage of a long rod without deep foundations.

These Frames are also made with a Roller Feed, which is an advantage when the logs to be cut are tolerably straight or level on the under side, so that they bear evenly on the Rollers; they can then be cut more expeditiously with the Roller than with the Rack Feed.

For situations where it is impossible to have any of the machinery working underground, the Frames are constructed on Base Plates, fixed on the Floor Level.

Size.	To cut Logs. Diameter.	Length of Log.	Average Power required.	Price.
1	20 inches	30 feet	5 HP.	£300 0 0
2	24 inches	30 feet	6 HP.	£325 0 0
3	30 inches	30 feet	7 HP.	£340 0 0
4	36 inches	30 feet	8 HP.	£380 0 0
5	42 inches	30 feet	10 HP.	£450 0 0

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WURR & LEWIS'S

IMPROVED PORTABLE SINGLE DEAL FRAMES.

These strong and compactly constructed Frames are entirely self contained and mounted on a cast iron base plate, are easily fixed, and do not require any underground foundations.

They will cut one Deal at once, of any size, up to 20 inches by 6 inches, are fitted with strong double Crank, forked Connecting Rod, Steel Frame for Saws, patent Silent Feed Motion, top and bottom Feed Rollers, both of which are driven by direct Gearing; this renders any back slip of the timber impossible while being cut, and is much better than when the bottom rollers only are driven.

	To Cut.	Weight.	Power required.	Price.
No. 1.	One Deal 20 inches by 6 inches ...	2½ Tons ...	3-Horse Power ...	£110 0 0

IMPROVED DOUBLE DEAL FRAMES.

These Frames are constructed to cut two Deals at once. Both top and bottom Feed Rollers are driven by direct Gearing, and each side has an independent Feed Motion, so that one Deal can be fed forward independently of the other at the speed which best suits the number of cuts being made. The work is thus done much more expeditiously.

No.	To Cut.	Weight.	Power required.	Price.
2	2 Deals 18 inches by 6 inches	3 Tons	5 HP.	£165 0 0
3	2 Deals 20 inches by 6 inches	3½ Tons	6 HP.	£175 0 0
4	2 Deals 24 inches by 6 inches	4 Tons	7 HP.	£185 0 0

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WURR & LEWIS'S

IMPROVED NON-EXPANDING HOLLOW AUGERS.

Inches ...	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Each	6/-	6/-	6/-	7/-	7/-	7/-	8/-	8/-	10/-	10/-	12/-	12/-

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IMPROVED UNIVERSAL HOLLOW AUGER.

This Auger will cut from $\frac{3}{8}$ to $1\frac{1}{2}$ inch, and is very light and convenient. Any part can be easily replaced, as it is all made to a gauge.

Price of Hollow Auger	each	£1	10 0
Extra Cutters	per pair	£0	3 0

IMPROVED BORING MACHINES.

Plain Vertical Boring Machine, with 2 Handles, without Augers		£1	6 0
Ditto ditto with 2 Handles, with Augers $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, and 2 inch		£3	0 0
Angular Boring Machine, with 2 Handles, without Augers		£1	16 0
Ditto ditto with 2 Handles, with Augers $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, and 2 inch...		£3	10 0

IMPROVED SPOKE TRIMMER.

This tool is required to trim the ends of Carriage Spokes, Chair Rounds, &c., before using the Hollow Auger.

Price...		£0	7 6

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WURR & LEWIS'S

HORIZONTAL SINGLE BLADE SAWING MACHINES.

These Frames Saw Logs into Boards or Planks by cutting off one at a time; they are advantageous where it is necessary to examine the log after each cut, or to frequently vary the thickness of the board. They require little Power. The Saw works horizontally, is very thin, and sharpened to cut both ways; cuts very fast, and works much cleaner than a Vertical Frame.

The Travelling Table is only a few inches above the floor, so that the logs can easily be canted on to it. This Table is fitted with dogs for holding the timber while being sawn, has a variable feed and quick return motion.

The Reciprocating Frame is made light and strong to work at a high speed.

Size.	To cut Logs.	Average Power required.	Price.
1	24 inches square, 24 feet long	3 HP.	£220 0 0
2	30 inches square, 24 feet long	3 HP.	£240 0 0
3	36 inches square, 24 feet long	4 HP.	£270 0 0
4	42 inches square, 24 feet long	5 HP.	£300 0 0
5	48 inches square, 24 feet long	5 HP.	£330 0 0

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WORSSAM'S

SINGLE CUTTER OUTSIDE MOULDING MACHINE.

This Machine is adapted for Cutting Mouldings, or Planing stuff of various kinds. It is very convenient for light work, and can, if desirable, be supplied with bottom and side cutters. The rate of feed may be varied from 12 to 40 feet per minute.

To Mould up to.	Approximate Weight.	Average Power.	Diam. of Pulleys on Countershaft.	Speed of Countershaft per minute.	Price.
4 inches by 2 inches thick	20 cwt.	2 HP.	10 inch	900 revs.	£55
7 inches by 3 inches thick	25 cwt.	3 HP.	12 inch	900 revs.	£70
9 inches by 3 inches thick	35 cwt.	4 HP.	12 inch	900 revs.	£90

WORSSAM'S

FOUR CUTTER MOULDING AND PLANING MACHINE.

This Machine is adapted to Plane, Groove, Tongue, Edge, Thickness, and Bead Match Boarding or Flooring, cut single or double mouldings of any pattern, in hard or soft wood, at rates varying from 12 to 40 feet per minute.

The under Cutter Block is situated in advance of the upper one, giving the timber under operation a smooth face to work on, whilst travelling beneath the Cutters.

The timber is firmly held by a neat Pressing Apparatus while under the action of the Cutters and Rolls; all the intermediate Shafts are at one end of the Machine, leaving the front quite clear for the workman.

The Table of the Machine is fixed, and the top Cutter moveable; an arrangement which allows the whole to be made stronger, and brings the Hand Wheel which regulates the depth of cut, within convenient reach of the operator. The Cutter Blocks do not overhang their Bearings, but revolve between them.

To work stuff up to.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Speed of Countershaft per minute.	Price.
9 inches by 3 inches thick	2¼ tons	4 HP.	12 inches	1000 revs.	£160
12 inches by 4 inches thick	3 tons	6 HP.	14 inches	900 revs.	£200

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WORSSAM'S

COMBINED PLANING AND MOULDING MACHINE.

This Machine is adapted to Plane, Groove, Tongue, Edge, Thickness, and Bead Match Boarding and Flooring, cut single or double Mouldings, &c., at rates varying from 12 to 40 feet per minute.

It resembles in most respects the Moulding Machine described on the preceding page, with the addition of the stationary plane irons for floor boards, which are contained in a box or drawer that may easily be withdrawn for the purpose of re-setting the irons or substituting another set.

Suitable Pressure Apparatus is provided to retain the timber well on its seat while passing over the irons.

The Cutter Blocks are all driven from the rear of the Machine, thus leaving the front clear for the admission of the material.

Each Machine will plane boards with the fixed irons up to 1½ inches thick only.

The bottom rollers can be raised or lowered to suit the nature of the work.

To work stuff up to.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Speed of Countershaft.	Price.
9 inches by 3 inches thick	3 tons	5 HP.	12 inches	900 revs.	£220
12 inches by 4 inches thick	4 tons	7 HP.	14 inches	900 revs.	£250

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WORSSAM'S

ROLLER PLANING MACHINE.

This Machine is intended for Preparing Flooring, Match Boarding, &c. It will Plane, Groove, Tongue, Edge, and Thickness, at one operation, boards or planks up to 12 inches wide by 4 inches thick.

The Plane Irons are fixed at suitable angles, in cast iron boxes, which may be withdrawn and others substituted when the irons are dull.

The Top Pressure Apparatus over the Plane Irons is so arranged that a regular pressure is exerted over the entire surface.

The top side and edges of the timber are acted upon by Cutters secured to revolving adze blocks.

The boards are fed through the various Cutters by means of powerful rollers, driven by Spur Gearing, and which may easily be raised or lowered to suit the various thicknesses of stuff.

To Plane up to.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft	Speed of Countershaft per minute.	Price.
12 inches wide by 4 inches thick	6 tons	6 HP.	16 inches	900 revs.	£350
16 inches wide by 6 inches thick	8 tons	8 HP.	16 inches	900 revs.	£420

Beading Block for either size, extra, £20.

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WORSSAM'S

PANEL BOARD PLANING MACHINE.

This Machine is designed for Planing thin boards such as door panels, and will work either hard or soft wood. It will admit timber up to 24 inches wide, and is well adapted for Planing and Thicknessing hard wood panels for railway carriages, stuff for fancy boxes, and other light work.

The Cutters are fixed to a horizontal revolving adze block, and the feed motion is continuous, and consists of revolving rollers capable of adjustment to suit the various thicknesses of stuff to be operated upon. The rate of feed can be varied by means of Strap Cone Pulleys provided for the purpose.

A suitable Pressure Apparatus serves to keep the material under operation firmly down on the bed of the Machine.

To Plane up to.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Speed of Countershaft.	Price.
24 inches wide by 3 inches thick	30 cwt.	3 HP.	14 inches	500 revs.	£150

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WORSSAM'S

COMBINED SHAPING, CHAMFERING, AND MORTISING MACHINE.

This is a useful Machine for Shaping, Chamfering, Boring, and Mortising various parts of Carts, Wagons, Thrashing Machines, &c., &c. It is also useful for Shaping Wheel Felloes, Spokes, and other work of a similar character.

The Cutters are secured to a wrought iron block revolving in horizontal bearings, one end being fitted with a driving pulley, while the other is bored to receive a mortising or boring tool.

For straight work a light cast iron table with fence is employed, through which the Cutters project, and when not required for use this table can be turned over out of the way.

For Chamfering or irregular work two circular guides, capable of lateral adjustment, are fitted above the Cutters, and the material to be operated upon is passed between them.

The Mortising and Boring Apparatus is of the reciprocating kind and similar in arrangement to that of the Patent General Joiner.

To work stuff up to.	Approximate Weight.	Average Power.	Diam. of Pulleys on Countershaft.	Speed of Countershaft.	Price.
7 inches wide	7 cwt.	1 HP.	4 inches	600 revs.	£22 0 0
12 inches wide	10 cwt.	2 HP.	6 inches	690 revs.	£33 0 0

Intermediate Shaft with Pulleys and Pedestals	£10 0 0
Mortising and Boring Apparatus for either size...	£15 0 0
Boring Apparatus for either size	£ 5 0 0
Saw Collars and Nuts for Circular Saw	£ 2 0 0
Pressure Rollers for thin boards	£ 4 10 0
Cutter Block and Bolts for Moulding...	£ 2 2 0
Hard Wood Saw Table...	£ 2 10 0

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WORSSAM'S

HORIZONTAL BORING MACHINE.

This is a useful little Boring Machine for general purposes. It comprises a Sliding Head Stock, having the Spindle fitted with a Driving Pulley, and bored to receive the Auger.

The Auger is brought to its work by a Foot Lever, which being counterbalanced, acts on the Sliding Head Stock and withdraws the boring tool.

The material to be operated upon is secured to a Table capable of being raised or lowered to suit the requirements of the work.

The Machine can be converted into a Horizontal Boring and Mortising Machine at extra cost if required.

Approximate Weight.	Average Power.	Diam. of Pulleys on Countershaft.	Speed of Countershaft.	Price.
10 cwt.	1 HP.	8 inches	750 revs.	£30 0 0

The above Machine will bore holes up to 7 inches deep and 2 inches diameter.

WORSSAM'S

SMALL TENONING MACHINE.

For light work this Machine is very valuable. It will cut single or double Tenons up to 5½ inches long and scribe the shoulders at one operation, and will tenon any kind of wood up to 18 inches wide by 6 inches thick.

Cutters of special construction serve to form the Tenons, and the piece or pieces to be operated upon are clamped to a light iron table worked by hand under the Cutters; the Cutter Heads are capable of adjustment to suit various lengths of shoulder. A Vertical Spindle, furnished with a Drunken Saw, forms the double Tenons.

For Scribing Shoulders a Disc or Block, fitted with suitable Cutters, is substituted for the Drunken Saw Apparatus; the Table is fitted with Spring Stops to regulate the lengths between the Shoulders, thus obviating the necessity for guaging.

Approximate Weight.	Average Power.	Diam. of Pulleys on Countershaft.	Speed of Countershaft.	Price, with Intermediate Shaft.
25 cwt.	2 HP.	12 inches	450 revs.	£75 0 0

To Tenon stuff up to 18 inches wide and 6 inches thick.

Vertical Spindle for cutting Double Tenons and Scribing Shoulders ... extra £12 0 0

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WORSSAM'S

COMBINED TENONING, MOULDING, AND BORING MACHINE.

In this Machine the Tenons are formed in a similar manner to that described on the preceding page.

A Table, with Clamps, carries the stuff between the Revolving Cutters.

The operations of Moulding and Thicknessing are performed at the opposite end of the Machine, the material being fed through the Cutters by "Self-acting Feed."

The Boring is performed in the usual way.

Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Speed of Countershaft.	Price.
2 tons	3 HP.	12 inches	600 revs.	£150

Mortising Apparatus, extra, £15.

WORSSAM'S

COMBINED MORTISING AND BORING MACHINE.

This Machine is specially intended for Mortising Doors, Window Frames, Cabinet Work, &c., and is capable of Mortising stuff of the various sizes stated below. The Chisel is fitted in a slide to which vertical reciprocating action is given by a Connecting Rod leading from a Spindle which carries the Driving Pulleys and Fly Wheel. The motion of the Chisel is arrested by suitable means provided for the purpose.

The Tool Holder is fitted with a simple arrangement for reversing the Chisel, and the Boring Apparatus is placed in proximity to the Mortise Chisel and in the same line, so that for hard wood all that is necessary is to cramp it to the Table, bore one or two holes, and then pass it under the Mortise Chisel.

This Machine can be supplied without the Boring Apparatus, which is seldom required when only soft wood is to be operated upon.

To Mortise stuff up to.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions per minute.	Price.
11 inches deep by 6 inches thick	2 tons	1 HP.	10 inches	200	£ 75
12 inches deep by 12 inches thick	2½ tons	1½ HP.	18 inches	200	£120
14 inches deep by 14 inches thick	3 tons	2 HP.	22 inches	200	£150

	11 inch size.	12 inch size.	14 inch size.
Boring Apparatus, extra, ...	£15	£20	£25

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WORSSAM'S

HAND MORTISING MACHINE.

A lad can perform as much work with the assistance of this Machine as six men can do mortising with Hand Chisels.

The Machines are made in two sizes, the larger one being of ample strength to work Chisels up to 2 inches wide.

The Table to carry the work can be adjusted to suit the dimensions of the required mortises.

Power is applied to the Chisel through a Counterbalance Lever.

No. 1. Large Machine, with Boring Apparatus, eight Mortise Chisels, Auger, Core Driver and Spanner. Approximate weight 5¼ cwt.... ... ... £30 0 0

No. 2. Small Machine, with Boring Apparatus. Approximate weight 4 cwt. £23 0 0

No. 3. Small Machine, with eight Mortise Chisels, Core Driver and Spanner. Approximate weight 3½ cwt. £20 0 0

WORSSAM'S

PATENT HAND MITREING MACHINE.

This is a useful tool for Joiners, Picture Frame Makers, &c. It is well adapted for mitreing Frame Mouldings, Panel Mouldings, &c.

The work to be operated upon is placed in the Machine at an angle of 45 degrees, and the Knife, with circular edge, is actuated perpendicularly by a lever.

The Machine is portable, and can be taken anywhere.

Large Mitreing Machine £6 0 0

Small Mitreing Machine £3 0 0

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WORSSAM'S

UNIVERSAL MOULDING, SHAPING, AND RECESSING MACHINE.

This Machine is applicable to a number of purposes, amongst which are Cutting Curvilinear Mouldings; Sticking Circular and Straight Sash Bars; Moulding, Rebating, and Grooving square or circular Sash Frames; forming Mouldings round raised Door Panels; Moulding, Chamfering, or Edging flat ornamental Balustrades to pattern; forming the Housings in String Boards for Stairs; and sinking Recesses of any design.

The Machine is furnished with top and bottom Vertical Cutter Spindles, driven from a Vertical Intermediate Shaft at the back.

The upper Spindle is lowered into the work by depressing a Handle; as soon as the Handle is released the Cutter rises from the work through the agency of a strong spring affixed to the Slide.

Suitable Stops are provided to regulate the depth for Recessing. When striking Mouldings, a fixed table is employed, but for recessing Curvilinear work, &c., a table on Friction Rollers is substituted.

The lower Cutter Spindle revolves in a reverse direction to the upper, and is useful for certain kinds of work.

The Machine is supplied with all the tools necessary to effect the operations above described.

Approximate Weight.	Average Power.	Diameter of Pulley on Countershaft.	Speed of Counter-shaft.	Price.
30 cwt.	2 HP.	10 inches	500 revs.	£110

Bottom Spindle, extra, £15.

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WORSSAM'S

IRREGULAR MOULDING AND SHAPING MACHINE.

(SINGLE SPINDLE).

This Machine is employed for Moulding and Shaping irregular work of various kinds. The material to be operated upon is secured to a Template of the form required. The Template is then pressed against a Collar on the Cutter Spindle, which brings the work in contact with the rapidly Revolving Cutters and gives the shape desired.

The Cutter Spindle and Cutters can be raised or lowered according to circumstances.

Approximate Weight.	Average Power.	Diam. of Pulleys on Countershaft.	Speed of Countershaft.	Price.
10 cwt.	1 HP.	10 inches	900 revs.	£28 0 0

Intermediate Shaft, with Pulleys and Pedestals ... ... extra £8 0 0
Apparatus for Reversing Spindle ... ... extra £9 0 0

WORSSAM'S

IRREGULAR MOULDING AND SHAPING MACHINE.

(DOUBLE SPINDLE).

This is a useful Machine for Moulding, Shaping, Chamfering, &c. irregular works of various kinds. It consists principally of a Main Standard provided with two Vertical Cutter Spindles, driven in reverse directions by means of suitable gearing.

The material to be operated upon is secured to a Template or Pattern which is pressed and manipulated against Collars on the Spindles, and thus conveys its outline to the stuff to which it is affixed.

The reverse action of the Cutters enables the stuff to be always worked in the direction of the grain.

Approximate Weight.	Average Power.	Diam. of Pulleys on Countershaft.	Speed of Countershaft.	Price.
25 cwt.	2 HP.	12 inches	700 revs.	£50 0 0

Intermediate Shaft, with Pulleys and Pedestals £15 0 0
Large Machine, with rising and falling Spindles and Countershaft... ... ... £80 0 0

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WORSSAM'S

SPLINT MACHINE,

FOR CUTTING SPLINTS FOR LUCIFER MATCHES, AND OTHER PURPOSES.

This Machine consists of a Frame carrying a box into which the material to be worked up is placed.

The Cutters are attached to a Slide, worked by a Connecting Rod from the Crank Shaft, and the material is kept firmly down by a weight.

This Machine will make about 5000 Double Splints per minute.

Approximate Weight.	Average Power.	Diameter of Pulleys.	Speed per minute.	Price.
20 cwt.	1 HP.	16 inches	170 revs.	£60 0 0

GLUE HEATING APPARATUS.

This Apparatus is for Heating Glue and maintaining it at a proper temperature by means of steam, thus avoiding the danger of an open fire amongst inflammable materials.

It consists of a Galvanized Iron Box into which steam is conducted by iron pipes. It is provided with Kettles for the Glue, Hot Well, and a gun metal Cock to take off the condensed steam.

Glue Heating Apparatus £10 0 0

Standard ... ... extra £ 3 0 0

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WORSSAM'S

PATENT ROLLER FEED TIMBER FRAME.

This Frame is adapted for Sawing round or square Logs of any description of timber into Boards, Planks, or Flitches.

The Log is fed to the Saws by Rollers actuated by Worssam's Patent Silent Feed Wheel, the rate of feed being variable according to the nature of the work and number of Saws employed.

The Swing Frame to carry the Saws is made with wrought iron sides and steel heads, and is worked from the Crank by a Connecting Rod and two Side Rods oscillating on pins half way up, by which means great economy is effected in the cost of excavations and foundations, and the Machine works with more ease and greater freedom from vibration.

The Pressure Apparatus for holding the Log to the bottom rollers is simple and effective, and can be readily raised or lowered to suit the irregularities of the Log.

Carriages, with wrought iron dogs, capable of lateral adjustment for following the curvature of the Log and running on rails bolted to the floor at the back and front of the Machine, serve to support and guide the Log whilst under operation.

The Connecting Rod, Crosshead, Crank, and Crankshaft are of the best wrought iron, and all the Bearings of best gun metal.

If required, a Deal Sawing Apparatus can be added by which two Deals or Flitches may be simultaneously sawn.

Frames to Saw Logs.	Maximum Number of Saws.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions of Crankshaft.	Price.
				ft. in.		
16 inches by 20 feet long	20	4 tons	4 HP.	2 6	160	£235 0 0
20 inches by 25 feet long	25	6 tons	5 HP.	3 0	150	£265 0 0
24 inches by 30 feet long	30	8 tons	6 HP.	3 6	140	£320 0 0
30 inches by 35 feet long	40	10 tons	8 HP.	4 0	130	£370 0 0
36 inches by 40 feet long	50	12 tons	10 HP.	4 6	120	£420 0 0
42 inches by 45 feet long	60	15 tons	12 HP.	5 0	110	£500 0 0

These Frames can be made to saw longer Logs than those mentioned above at an extra cost of 20/- for every additional foot.

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WORSSAM'S

PATENT RACK FEED TIMBER FRAME.

This Frame is specially adapted for Sawing unusually crooked and uneven Logs, and differs from the one just described in having a "Rack Feed" instead of a "Roller Feed" Motion.

Each Log to be operated upon is secured to a travelling Rack Carriage or Drag, running on Rollers in Carriages bolted to the floor at the back and front of the Machine.

The Rack Carriage is traversed to and fro by means of Spur Gearing with quick return motion, and suitable means are provided to regulate the feed according to the nature of the Log and number of Saws employed.

The Log is secured in position by Carriages with wrought iron dogs which clip the ends, and are adjustable laterally to suit the curvature of the Log.

At the back and front of the Saws are Rollers, which may be raised or lowered while the Frame is in motion to suit the irregularities of the underside of the Log, corresponding upper pressure rollers being provided to hold it well down to the bottom rollers. By these means the Log is maintained in position no matter how much it may be curved.

The Swing Frame, Crosshead, Crank, and Crankshaft are of wrought iron and steel, and the Bearings of best gun metal.

Frames to saw Logs.	Maximum Number of Saws.	Approximate Weight.	Average Power.	Diam. of Pulleys. ft. in.	Revolutions of Crankshaft.	Price.
16 inches by 20 feet long	20	5 tons	4 HP.	2 6	160	£300 0 0
20 inches by 25 feet long	25	7 tons	5 HP.	3 0	150	£360 0 0
24 inches by 30 feet long	30	9 tons	6 HP.	3 6	140	£410 0 0
30 inches by 35 feet long	40	11 tons	8 HP.	4 0	130	£500 0 0
36 inches by 40 feet long	50	13 tons	10 HP.	4 6	120	£560 0 0
42 inches by 50 feet long	60	16 tons	12 HP.	5 0	110	£650 0 0

Extra length of Rack Carriage, with the necessary Rollers and Carriages.

Size of Machine	16″	20″	24″	30″	36″	42″.
Per Foot	40/-	40/-	45/-	50/-	55/-	60/-.

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WORSSAM'S

PATENT PORTABLE TIMBER FRAME.

This Frame is intended for Sawing round or square Logs, and has been specially designed for use in places where the presence of water precludes foundations or where the Frame is required to be removed from place to place to suit the work to be operated upon.

It is equally as strong as the other Frames, but all the working parts are above the level of the floor, and the Side Standards are bolted to a strong cast iron Bed Plate.

The Swing Frame to carry the Saws is worked by means of two side rods oscillating from the top Crosshead, and leading direct to a double throw Crankshaft running in bearings on the Bed Plate.

The Log is advanced to the Saws by Rollers. Carriages, with lateral adjustment and running on rails at the back and front of the Machine, serve to support and maintain it in position.

Deal Sawing Apparatus can be added if required.

Frames to Saw Logs.	Maximum Number of Saws.	Approximate Weight.	Average Power.	Diam. of Pulleys. ft. in.	Revolutions of Crankshaft.	Price.
14 inches by 25 feet long	14	2 tons	3 HP.	2 0	200	£170 0 0
18 inches by 25 feet long	18	3 tons	4 HP.	2 6	180	£200 0 0
24 inches by 30 feet long	24	5 tons	5 HP.	3 0	160	£280 0 0
30 inches by 35 feet long	30	7 tons	6 HP.	3 0	140	£340 0 0

	14 inches by 25 feet.	18 inches by 25 feet.	24 inches by 30 feet.	30 inches by 35 feet.
Deal Sawing Apparatus	£25	£30	£40	£45

Any of these Frames can be made to saw larger Logs than those mentioned above at an extra cost of 20/- for every additional foot.

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WORSSAM'S

PATENT PORTABLE TIMBER FRAME,

With Wood Carriage and Wheels.

This Frame is similar to the one described on the previous page, but it is mounted on a Wood Carriage with wheels, axles, and adjustable fore carriage, for convenience of transport.

To prepare this Machine for work all that is needed is to remove the carriage and wheels and to bolt the Foundation Plate to strong sleepers bedded into the ground.

Timber laid at the back and front of the Machine serve to carry the rails upon which the dog carriages run, which support the ends of the Log.

Frames to Saw Logs.	Maximum Number of Saws.	Approximate Weight.	Average Power.	Diam. of Pulleys.	Revolutions of Crankshaft.	Price.
				ft. in.		
14 inches by 25 feet long	14	2½ tons	3 HP.	2 0	200	£200
18 inches by 25 feet long	18	3½ tons	4 HP.	2 6	180	£235
24 inches by 30 feet long	24	6 tons	5 HP.	3 0	160	£320
30 inches by 35 feet long	30	8 tons	6 HP.	3 0	140	£380

Any of these Frames can be made to Saw longer Logs than those mentioned above at an extra cost of 20/- for every additional foot.

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WORSSAM'S

PATENT BUILDERS' TIMBER FRAME.

This Frame has been designed for the use of Contractors, Builders, and others whose requirements do not necessitate the use of such powerful Machines as those previously described.

It is capable of Sawing a Log or two Deals simultaneously, and being of light construction can be run at a higher speed than usual.

The Log is advanced to the Saws by Rollers actuated by suitable gearing and Worssam's Patent Silent Feed Wheel, with corresponding top pressure rollers serving to keep the Log well down to the bottom rollers.

Carriages, with wrought iron dogs, capable of lateral adjustment for following the curvature of the Log, and running on rails bolted to the floor at the back and front of the Machine, serve to support and guide the Log whilst under operation.

The Swing Frame is made with wrought iron sides and steel heads, and is worked by Side Rods with Crosshead and Connecting Rod leading to the Crank, all of best wrought iron.

Frames to Saw Logs.	Maximum Number of Saws.	Approximate Weight.	Average Power.	Diam. of Pulleys.	Revolutions of Crankshaft.	Price.
				ft. in.		
18 inches by 25 feet long	18	4 tons	4 HP.	2 6	200	£205
24 inches by 30 feet long	24	5 tons	5 HP.	3 0	180	£260
30 inches by 35 feet long	30	7 tons	6 HP.	3 6	150	£325

	18 inches by 25 feet.	24 inches by 30 feet.	30 inches by 35 feet.
Deal Sawing Apparatus	£25	£30	£35

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WORSSAM'S

PATENT DOUBLE TIMBER FRAME.

This Frame is specially adapted for use in Russia, Sweden, and Norway, for the conversion of fir and pine Logs into Planks, Deals, and Battens.

The Swing Frame for carrying the Saws is constructed in two divisions, the Connecting Rod oscillating between them on a pin about half way up, whereby deep excavations and expensive foundations are avoided.

Two Logs can be operated upon simultaneously, being fed to the Saws by Rollers actuated by suitable gearing; corresponding upper pressure rollers serving to hold the Logs to the bottom rollers.

Carriages, with dogs or clips, and running on rails bolted to the floor at the back and front of the Machine serve to maintain the Logs in position.

The Feed Motion to advance the Logs to the Saws is variable from 1 foot to 4 feet per minute.

Frames to Saw two Logs.	Maximum Number of Saws.	Approximate Weight.	Average Power.	Diam. of Pulleys.	Revolutions of Crankshaft.	Price.
				ft. in.		
12 inches by 20 feet long	16	4 tons	5 HP.	2 6	180	£270 0 0
16 inches by 25 feet long	20	6 tons	6 HP.	2 6	160	£320 0 0
20 inches by 30 feet long	26	8 tons	8 HP.	3 0	140	£380 0 0
24 inches by 35 feet long	32	10 tons	10 HP.	3 6	120	£450 0 0

These Frames can be made to Saw longer Logs than those mentioned above at an extra cost of 40/- per every additional foot.

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WORSSAM'S

PATENT DUPLEX ROLLER FEED TIMBER FRAME.

This Frame is specially adapted for countries where frozen Logs are met with. It resembles in most respects that described at page 330, differing only in having the Top Pressure rollers actuated by gearing as well as the bottom ones, whereby additional power is obtained for advancing the Log to the Saws.

The Top Pressure Rollers are so arranged that they are capable of being raised or lowered to suit the curvature or irregularity of the Log under operation.

All the parts are of the best materials and workmanship, and of ample strength throughout.

Frames to Saw Logs.	Maximum Number of Saws.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions of Crankshaft.	Price.
				ft. in.		
20 inches by 25 feet long	25	6 tons	5 HP.	3 0	150	£255 0 0
24 inches by 30 feet long	30	8 tons	6 HP.	3 6	140	£320 0 0
30 inches by 35 feet long	40	10 tons	8 HP.	4 0	130	£400 0 0

Any of these Frames can be made to saw longer Logs than those mentioned above at an extra cost of 20/- for every additional foot.

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WORSSAM'S

PATENT PORTABLE DUPLEX ROLLER FEED TIMBER FRAME.

The principle of this Frame is similar to that of the one just described, the main difference being that it is adapted to places where excavations and foundations are inadmissible, or where it is desired to move the Frame from place to place to suit the work to be performed.

The Working Parts are above the floor line, and the Side Standards are bolted to a strong foundation plate.

Frames to saw Logs.	Maximum Number of Saws.	Approximate Weight.	Average Power.	Diam. of Pulleys.	Revolutions of Crankshaft.	Price.
				ft. in.		
18 inches by 25 feet long	18	3 tons	4 HP.	2 6	180	£255 0 0
24 inches by 30 feet long	24	5 tons	5 HP.	3 0	160	£320 0 0
30 inches by 35 feet long	30	7 tons	6 HP.	3 0	140	£400 0 0

Any of these Frames can be made to saw longer Logs than those mentioned above at an extra cost of 20/- for every additional foot.

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WORSSAM'S

PATENT COMBINED TIMBER FRAME AND ENGINE.

The combination of Timber Frame and Engine is very advantageous where it is impossible either from insufficient Engine Power or other causes, to drive direct from the Main Shaft.

This Frame is similar to the one described on page 330, but in place of Driving Riggers the Connecting Rod of the Engine leads direct on a Crank at the opposite end of the Frame Shaft.

The Engine may be provided with steam from the Mill boiler, or from an auxiliary vertical or horizontal boiler placed in close proximity.

Frames to Saw Logs.	Maximum Number of Saws.	Approximate Weight.	Revolutions of Crankshaft.	Price.
16 inches by 20 feet long	20	5 tons	160	£300 0 0
20 inches by 25 feet long	25	7 tons	150	£370 0 0
24 inches by 30 feet long	30	9 tons	140	£420 0 0
30 inches by 35 feet long	40	12 tons	130	£500 0 0
36 inches by 40 feet long	50	15 tons	120	£570 0 0

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WORSSAM'S

HORIZONTAL SAW FRAME.

This Frame is specially applicable for the conversion of hard and costly woods into panels and other thin stuff.

It may be employed in places where foundations are inadmissible, or where little power is obtainable.

The Machine carries only one saw which reciprocates in a horizontal frame, taking motion by a Connecting Rod from a Crank and Crankshaft.

The stuff to be operated upon is secured to a travelling table to which motion is given by suitable gearing.

The Swing Frame for carrying the Saw is of light construction, and works in a saddle which can be raised or lowered according to the required thickness of each board.

The Saw is sharpened and set to cut both ways; it works at a high speed and gets through a great quantity of work.

Frames to Saw Logs.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions of Crankshaft.	Price.
			ft. in.		
24 inches by 25 feet long	6 tons	2 HP.	2 0	220	£250
30 inches by 25 feet long	7 tons	3 HP.	2 0	200	£270
36 inches by 25 feet long	8 tons	4 HP.	2 6	180	£310
42 inches by 25 feet long	9 tons	5 HP.	2 6	160	£350

	24 inch Machine.	30 inch Machine.	36 inch Machine.	42 inch Machine.
Extra length of Table, per foot	£2	£3	£4	£5.

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WORSSAM'S

PATENT DOUBLE DEAL FRAME.

This Frame is adapted for Sawing two Deals or Flitches simultaneously.

The Swing Frame for carrying the Saws is constructed in two equal divisions, each being devoted to a separate Deal or Flitch. It works in suitable guides, and is balanced by a counter-weight on the Fly-wheel. The Connecting Rod that works the Frame passes up the centre and oscillates on a pin about half way up, thereby avoiding excavations and costly foundation, required where the Connecting Rod is engaged with the pin at the bottom of the Frame.

The Feed Motion for advancing the Deals to the Saws can be of either the "Rack" or the "Roller" type. The "Rack" is generally preferred as being the more certain in action.

Carriages bolted to the floor at the back and front of the Frame serve to support the Deals while being sawn.

All the parts of the Frame requiring great strength are of best wrought iron and steel.

Frames to Saw two Deals.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions of Crankshaft.	Price.
			ft. in.		
12 inches by 4 inches thick	3 tons	3 HP.	2 6	250	£160
14 inches by 4 inches thick	3½ tons	4 HP.	2 6	220	£180
18 inches by 6 inches thick	4 tons	5 HP.	2 6	190	£200
24 inches by 6 inches thick	5 tons	6 HP.	3 0	160	£220

The Prices of the above Frames include sufficient length of Chain or Rack to Saw Deals 24 feet long.

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WORSSAM'S

PATENT EQUILIBRIUM DEAL FRAME.

This Frame differs from the ordinary Double Deal Frame described on the previous page in having two distinct Swing Frames instead of one, each reciprocated by a separate Connecting Rod leading from a double throw Crankshaft. A high rate of speed is obtainable by this arrangement, as the Frames counterbalance each other at any part of the stroke.

The Feed Motion can either be of the "Roller" or "Rack" type. The latter is usually preferred, being more certain in action and less troublesome in many respects.

Two Racks pass through the centre of the Machine between the two Swing Frames which are acted upon independently by two separate Feed Wheels, which are both on one side of the Machine, and can be easily controlled by one man.

No deep excavations or expensive foundations are required for this Frame.

Frames to Saw two Deals.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions of Crankshaft.	Price.
			ft. in.		
12 inches by 4 inches thick	3 tons	4 HP.	2 6	300	£220
14 inches by 4 inches thick	4 tons	5 HP.	2 6	280	£270
18 inches by 6 inches thick	5 tons	6 HP.	2 6	250	£300
24 inches by 6 inches thick	6 tons	8 HP.	3 0	210	£330

The Prices of the above Frames include sufficient length of Chain or Rack to Saw Deals 24 feet long.

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WORSSAM'S

PATENT PORTABLE DOUBLE DEAL FRAME.

This Frame is adapted to the purposes of Builders, Contractors, and others, and resembles in most respects that described on page 340, but the working parts are placed above the floor to allow the Frame to be used in places where excavations and foundations are impossible.

It will Saw two Deals simultaneously, which are fed to the Saws by a Rack passing through a loop in the Connecting Rod, which oscillates on a pin on the top Crosshead.

Lateral Pressure Apparatus is provided to keep the Deals to the Fence while being sawn. Carriages, bolted to the floor at the back and front of the Machine, carry rollers which support both the Deals and the Rack.

The Crankshaft runs in Bearings on a strong Foundation Plate.

The Swing Frame, Connecting Rod, Crank and Crankshaft are of the best wrought iron and steel, and all the other parts are of ample strength.

Frames to Saw two Deals.	Approximate Weight.	Average Power.	Diam. of Pulleys.	Revolutions of Crankshaft.	Price.
			ft. in.		
12 inches by 4 inches thick	2½ tons	3 HP.	2 0	200	£150
14 inches by 4 inches thick	3 tons	4 HP.	2 0	180	£165

The Prices of the above Frames include sufficient length of Chain or Rack to Saw Deals 24 feet long.

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WORSSAM'S

PATENT SINGLE DEAL FRAME.

This Frame is constructed to Saw only one Deal or Flitch at a time, and is designed to meet the requirements of Builders, Contractors, and others who have not sufficient sawing to employ a Double Frame.

It occupies little space, requires only light foundations, and is self-contained. The Deal is fed to the Saws by "Rack and Spur Gearing," which is generally preferred to "Roller Feed" Motion, as being more reliable in action.

The Deal is kept well up to the Fence by lateral Pressure Apparatus; and Roller Carriages and Rollers are provided for carrying the deal at the back and front of the Machine.

The Swing Frame, Crankshaft, and Crank, and other parts requiring great strength are of the best wrought iron and steel.

Frames to Saw Deals.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions of Crankshaft.	Price.
			ft. in.		
12 inches by 4 inches thick	1½ tons	2 HP.	1 3	250	£100
14 inches by 4 inches thick	2 tons	3 HP.	1 6	240	£115
18 inches by 6 inches thick	2½ tons	4 HP.	1 9	200	£130
24 inches by 6 inches thick	3 tons	5 HP.	2 0	170	£160

The Prices of the above Frames include sufficient length of Chain or Rack to saw Deals 24 feet long.

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WORSSAM'S

RACK BENCH.

This Machine is specially designed to suit the purposes of Contractors, Builders, Railway Carriage and Wagon Builders, and Ship Builders, for Sawing round or square Logs into Flitches or Scantlings that can afterwards be re-sawn into thinner stuff by a Saw Frame.

The Log to be sawn is placed on a strong wrought iron Table, running on rollers, in Carriages bolted to the floor at the back and front of the Machine, suitable Gearing serving to advance the Table to the Saws at rates varying from 12 to 40 feet per minute, the return motion being about 80 feet per minute.

Rollers of suitable dimensions are ranged at the back of the Machine to receive the timber previous to and after being sawn. The timber has simply to be rolled (not lifted) on to the Table, which is almost on a level with the floor. The weight of the timber is sufficient to keep the Log in position without fixing.

Motion has hitherto been imparted to the Table by means of a Pinion Gearing into a Rack and working in a **Vertical Plane**; but sometimes the Rack rode on the Pinion, raised the Table, and spoilt the work. To obviate this, the Rack and Pinion have been constructed to work in a **Horizontal Plane**, the side of the Rack instead of the back being bolted to the underside of the Table, by which means the Table works more steadily and smoothly than before.

Maximum Diam. of Saw.	To Saw.	Dimensions of Travelling Table.	Approximate Weight.	Average Power.	Diam. of Pulleys.	Revolutions of Saw Spindle.	Price.
	inches deep				ft. in.		
48 inches	19	30 feet long	4 tons	6 HP.	1 8	800	£170
52 inches	21	30 feet long	5 tons	8 HP.	1 8	700	£180
62 inches	26	30 feet long	6 tons	10 HP.	2 0	600	£200
72 inches	31	30 feet long	7 tons	14 HP.	2 6	450	£240

	48 inches.	52 inches.	62 inches.	72 inches.
Extra length of Table, with necessary Rollers and Carriages...	£2 ...	£2 ...	£2 10s. ...	£3

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WORSSAM'S

ROLLER FEED SAW BENCH.

This Bench is intended for Sawing Deals and Battens in which only one or two cuts are required, and is a useful adjunct to a Planing Machine.

For Sawing several cuts the requisite number of Saws are mounted on the Saw Spindle, with distance collars placed between them, corresponding to the thickness of the Boards to be cut.

A Feed Roller or Rollers are employed to feed the stuff to the Saw or Saws.

The Main Standard of the Machine is cast in one piece to ensure strength, and the Saw Spindle revolves in Bearings bolted to the underside.

The rate of feed is capable of variation according to the nature and dimensions of the timber.

The Machine being driven at a high rate of speed, and the Feed Motion continuous, enables a great amount of work to be performed.

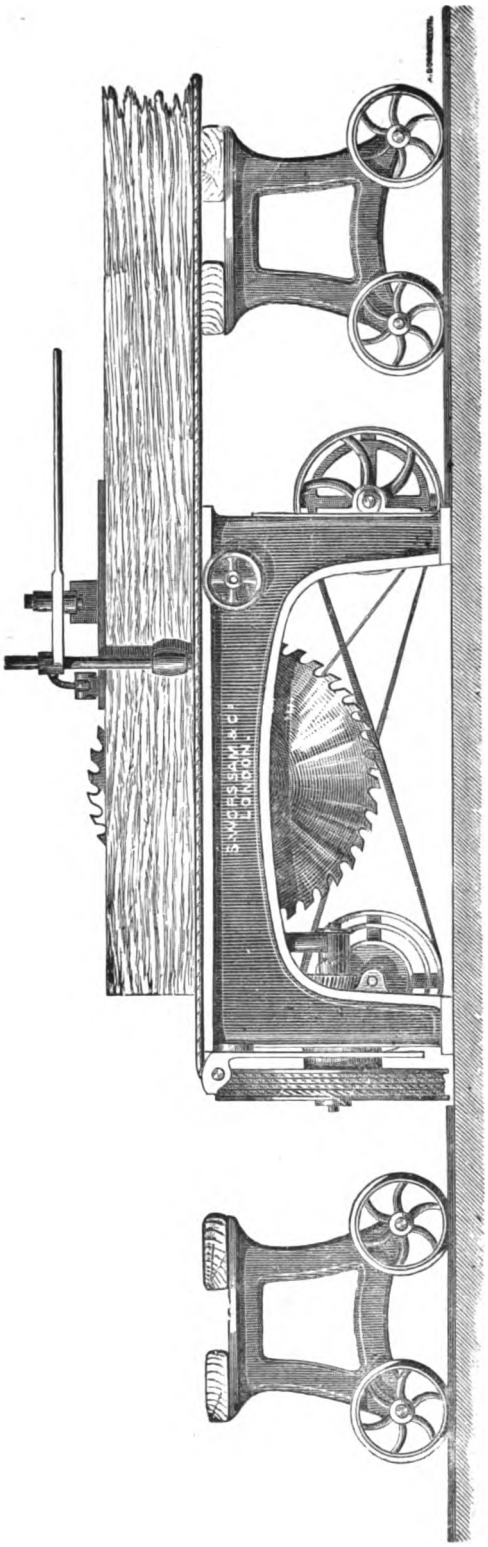
Maximum Diameter of Saw.	To Saw.	Dimensions of Table.	Approximate Weight.	Average Power.	Diam. of Pulleys.	Revolutions of Saw Spindle.	Price.
inches.	inches deep.	ft. in. ft. in.			inches.		
30	11	5 0 by 2 9	16 cwt.	4 HP.	12	1200	£50
36	14	5 6 by 3 0	18 cwt.	5 HP.	14	1000	£60

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WORSSAM'S

SELF-ACTING SAW BENCH,

With Carriages and Rails.



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WORSSAM'S

SELF-ACTING SAW BENCH,

With Carriages and Rails.

This Bench, as illustrated on opposite page, is used for cutting Logs, Planks, Deals, Battens, &c., and is provided with an improved Self-acting Rope Feed Motion for advancing the timber to the Saw.

The Feed Rope works round a Drum of large diameter, which considerably reduces the strain and twist to which the Rope is subjected when working over a Drum of small diameter. The Drum is provided with suitable Striking Gear, by which it can be stopped without affecting the speed of the Saw Spindle.

The rate of feed can be varied by Cone Pulleys from 15 feet to 60 feet per minute, according to the dimensions and nature of the material.

An Adjustable Fence, fitted with Pressure Apparatus for Deals, is supplied with each Bench. The Main Standard is cast in one piece, to the underside of which the blocks for the Saw Spindle Brasses are bolted.

The Saw Spindle is fitted with Fast and Loose Pulleys, and runs in long gun metal Bearings.

Carriages running on rails bolted to the floor at the back and front of the Machine serve to support the ends of long Logs.

Maximum Diameter of Saw.	To Saw.	Dimensions of Table.	Approximate Weight.	Average Power.	Diam. of Pulleys.	Revolutions of Saw Spindle.	Price.
	inches deep.	ft. in. ft. in.			inches.		
36 inches	14	5 6 by 3 0	1½ tons	6 HP.	14	1000	£55
42 inches	17	6 0 by 3 0	2 tons	7 HP.	14	900	£65
48 inches	20	7 0 by 3 6	2½ tons	8 HP.	16	800	£75
54 inches	22	7 6 by 3 6	3 tons	10 HP.	16	700	£85

Carriages and Rails for any of the above sizes, extra, £18.

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WORSSAM'S

RISING AND FALLING SPINDLE BENCH.

This Machine will Saw, Groove, Rebate, Tongue, Mould, and Bore, and has been expressly designed for the use of Builders, Joiners, Pattern, Box, Frame, and Pianoforte Makers, and for use on Private Estates.

The main Standard is cast in one piece, the top being truly planed and fitted with a Fence adjustable to suit different widths of timber.

A Bracket bolted to the underside of the main Standard carries a slide in which the Saw Spindle revolves; a handle conveniently placed at one end of the Bench serving to raise or lower it.

For Tenoning, a suitable Fence with Tenoning Clamp is fitted to the ordinary Fence; the shouldering of the Tenon being subsequently effected by means of a plate working in a V groove in the table.

For cutting Mouldings, Cutters are substituted for the Saw.

For Grooving and Rebating, a Drunken Saw is employed.

For Boring, an Auger is inserted in the opposite end of the Saw Spindle, which is bored up; an independent rising and falling table carrying the timber to be operated upon.

Maximum Diameter of Saw.	To Saw.	Dimensions of Table.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions of Saw Spindle.	Price.
		ft. in. ft. in.			inches.		
20 inches	7 inches	3 6 by 2 0	8 cwt.	2 HP.	6	1700	£30
24 inches	9 inches	4 6 by 2 6	12 cwt.	3 HP.	12	1500	£35
30 inches	11 inches	5 0 by 2 9	15 cwt.	4 HP.	12	1200	£45
36 inches	14 inches	5 6 by 3 0	18 cwt.	5 HP.	14	1000	£55

Tenoning Apparatus, with False Fence and Clamp, extra £12 0 0
Cross Cutting Plate, for shouldering Tenons, Squaring off and Mitreing ... £ 2 0 0
Cutter Block for Moulding, Tonguing, Beading, &c. ... ... £ 2 0 0
Boring Apparatus... ... ... £ 6 10 0
Drunken Saw Apparatus for Grooving and Rebating ... ... £ 3 0 0
Planing Disc and Set of Cutters ... ... £ 7 0 0
Intermediate Shaft, with Driving Rigger, Fast and Loose Pulleys, and Pedestal £12 10 0

If the Bench is required for Moulding, the Saw Spindle should be fitted with a double motion Cone Pulley to increase the number of revolutions.

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WORSSAM'S

ORDINARY GENERAL JOINER.

This General Joiner is a very useful Machine, although more limited in application than the Patent General Joiner hereafter described, on account of the alterations which are necessary to suit each operation. This is particularly the case with regard to Mouldings, as they cannot be struck simultaneously with the processes of Sawing or Tenoning and Mortising, but must be worked on the Saw Table above instead of below, a Cutter Block being substituted for the Saw.

No means are provided for shouldering Tenons, but the material, after being passed across the Double Saws, has to be removed from the Clamp and placed horizontally on a sliding plate. This is then traversed beyond a Saw on the main Spindle, withdrawn, and the operation repeated, cutting away the cheeks and completing the Tenon.

The operations of Sawing, Grooving, Tonguing, Rebating, Chamfering, Boring, &c., are performed in the usual manner.

Each Machine is provided with a Boring Apparatus, False Fence, Tenoning Slide, Cross-cutting Plate, six turned hard wood Collars, filling in Plate, and set of Spanners.

Maximum Diameter of Saw.	To Saw.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
	inches deep.					
26 inches	9	23 cwt.	6 HP.	12 inches	600	£80
30 inches	11	25 cwt.	7 HP.	12 inches	600	£90

Each Machine can also be supplied with the following tools and appliances :—

Drunken Saw Apparatus for Grooving from $\frac{1}{8}$ inch to $1\frac{1}{4}$ inch wide, with one hard wood filling in Plate ... ... £ 3 0 0

Planing Disc and Set of Cutters ... ... £ 7 0 0

Intermediate Shaft, with Double Motion Rigger, Fast and Loose Pulleys, and Pedestals £12 10 0

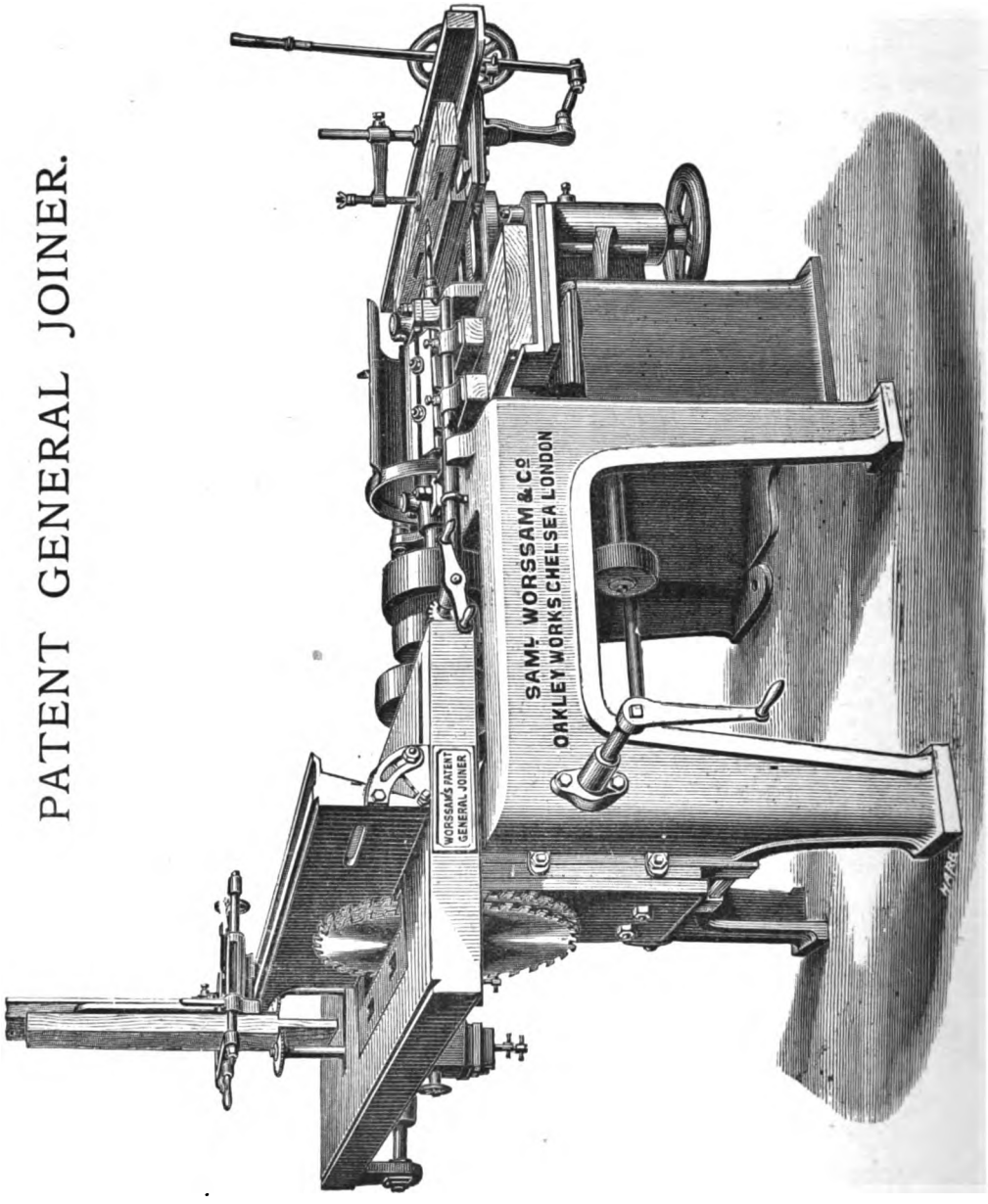
Boring Apparatus ... ... £ 5 0 0

Mortising and Boring Apparatus £15 0 0

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WORSSAM'S

PATENT GENERAL JOINER.



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WORSSAM'S

PATENT GENERAL JOINER.

Worssam's Patent General Joiner, as illustrated on opposite page, is specially designed to meet the requirements of Joiners, Builders, Contractors, Cabinet Makers, and Pianoforte Manufacturers.

It is capable of performing almost all the varieties of work usually done by manual labour in the joiners' shop, such as Sawing, both with the grain and across it; Mitreing, Chamfering, Wedge Cutting, Tenoning (single or double), Planing, Moulding (straight or curved), Beading, Rebating, Grooving, Tonguing, Squaring up, Mortising, Boring Curved and Irregular work.

All the movements are independent of each other so that they may be worked separately or in conjunction, so that the workman can pass from one operation to another without altering the disposition of his appliances.

Thus he can in a moment pass from Tenoning to Moulding, from Moulding to Sawing, Mortising, &c., &c., or he may, with the aid of two lads, perform all the diverse actions simultaneously.

By means of the Patent General Joiner,—(1) Tenons are completed at one operation—(2) Mouldings are struck at an independendent Table and by a Self-acting Feed—(3) Stuff up to 9 inches by 3 inches is also planed at an independent Table—(4) Mortises are chased—(5) Irregular work and curved Mouldings are formed to almost any pattern.

The Tenoning Spindles may be furnished with Saws, or Cutter Blocks and Cutters, as in an ordinary Tenoning Machine; they receive motion from the Main Saw Spindle, and no separate intermediate is required. The Tenoning Clamp is fitted with a convenient arrangement, by means of which the stuff can be readily "guaged" and quickly secured or released.

To save space in the workshops, the stuff to be tenoned is held in a vertical instead of a horizontal position.

The Planing and Moulding Apparatus is entirely self-feeding, and will plane or cut Mouldings up to 9 inches by 3 inches at the rate of about 25 feet per minute; the Feed can, however, be graduated to any rate to suit the nature of the material under operation.

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WORSSAM'S
PATENT GENERAL JOINER
(CONTINUED).

The Mortising Apparatus is fed up to the Cutter at each stroke of a Hand Lever, and the table is fitted with stops for regulating the depth and length of the Mortises.

The "Fence" is used for a variety of purposes, and is arranged so that it can be adjusted to almost any angle; it is worked parallel to the Saw by square thread screws, working in gun-metal nuts, and can be removed in a few seconds for cross-cutting purposes.

Six separate Machines are superseded by the use of the Patent General Joiner, viz.:—Saw Bench, Tenoning Machine, Moulding Machine, Mortising Machine, Boring Machine, and Curvilinear Machine, the costs of which are much more than that of the General Joiner; so that a considerable saving is effected by using the "Joiner" in wages, wear and tear, rent, power, shafting, belts, and cost of fixing.

Each Machine is provided with rising and falling Saw Table, fitted with Fence adjustable by square threaded nuts and bevel wheels; False Fence; Tenoning Clamp, with stops to guage the distance between the shoulders; six turned hard wood Collars to suit different thicknesses of Tenons; Cross-cutting Plate for Squaring, Mitreing, &c.; filling in Plate; extra Feed Roller; and Spanners.

Maximum Diameter of Saw.	To Saw.	To Plane.	Approximate Weight.	Average Power.	Diameter of Pulley on Countershaft.	Revolutions of Countershaft.	Price.
inches.	inches deep.	inches wide.			inches.		
26	9	9	35 cwt.	5 HP.	12	600	£130
30	11	11	40 cwt.	6 HP.	12	600	£140

EXTRAS, IF REQUIRED.

Patent Vertical Spindle Tenoning Apparatus, with Two 4 inch Circular Saws for cutting Shoulders; Counter Shaft, Pulleys, and one Cutter Block for Curvilinear work £18 0 0

Drunken Saw Apparatus for Grooving from $\frac{1}{8}$ to $1\frac{1}{2}$ inch wide, with one hard wood filling in Plate ... ... £ 3 0 0

Mortising and Boring Apparatus, with Rising and Falling Table, Hand Lever and Screw Cramp, and Stops to regulate the length and depth of Mortise £18 0 0

Intermediate Shaft, with Double Motion Rigger for varying the speed of Saw Spindle, Fast and Loose Riggers, Gut and Cone Pulley, and Pedestals ... £15 0 0

Side Cutters for either of the above Machines, with one set of Plane Irons to each Block and Pulley on Countershaft to drive same £30 0 0

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WORSSAM'S

JOINERS' SAW BENCH.

The Joiners' Saw Bench is intended for those who have not sufficient work to employ a Patent or an Ordinary General Joiner. It resembles those Machines in various respects, but as each new operation requires a change of appliances, it is more limited in productive power, but is nevertheless a most useful and profitable Machine.

It is capable of Sawing, Tenoning, Cross-cutting, Squaring off, Planing (by means of a Disc), Moulding, Edging, Grooving, Rebating, Tonguing, and Boring or Mortising. The Main Standard is cast in one piece to ensure strength, and the top is planed and fitted with Fence capable of adjustment, parallel to the Saw, by means of square threaded screws and bevel gearing. The Saw Spindle works in gun metal Bearings, which can be raised or lowered by means of a Crank Handle within easy reach of the operator.

For Cutting Tenons two Saws are used through which the stuff is passed after being screwed to the Clamp. The shouldering is subsequently effected by means of a plate sliding in a V groove in the Table. Mouldings up to about three inches wide are effected by Cutters fixed to the Block, substituted for the Saw. The operation of Planing is effected by a Disc fitted with Cutters, which also takes the place of the Saw. The operations of Grooving, Rebating, and Tonguing are effected by a Drunken Saw and Cutters. For Boring or Mortising the tools are screwed into the outer end of the Saw Spindle, the stuff to be operated upon being secured to an independent Table.

Maximum Diameter of Saw.	To Saw.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
	inches deep.					
26 inches	9	15 cwt.	3 HP.	12 inches	600	£50
32 inches	11	20 cwt.	4 HP.	14 inches	600	£70

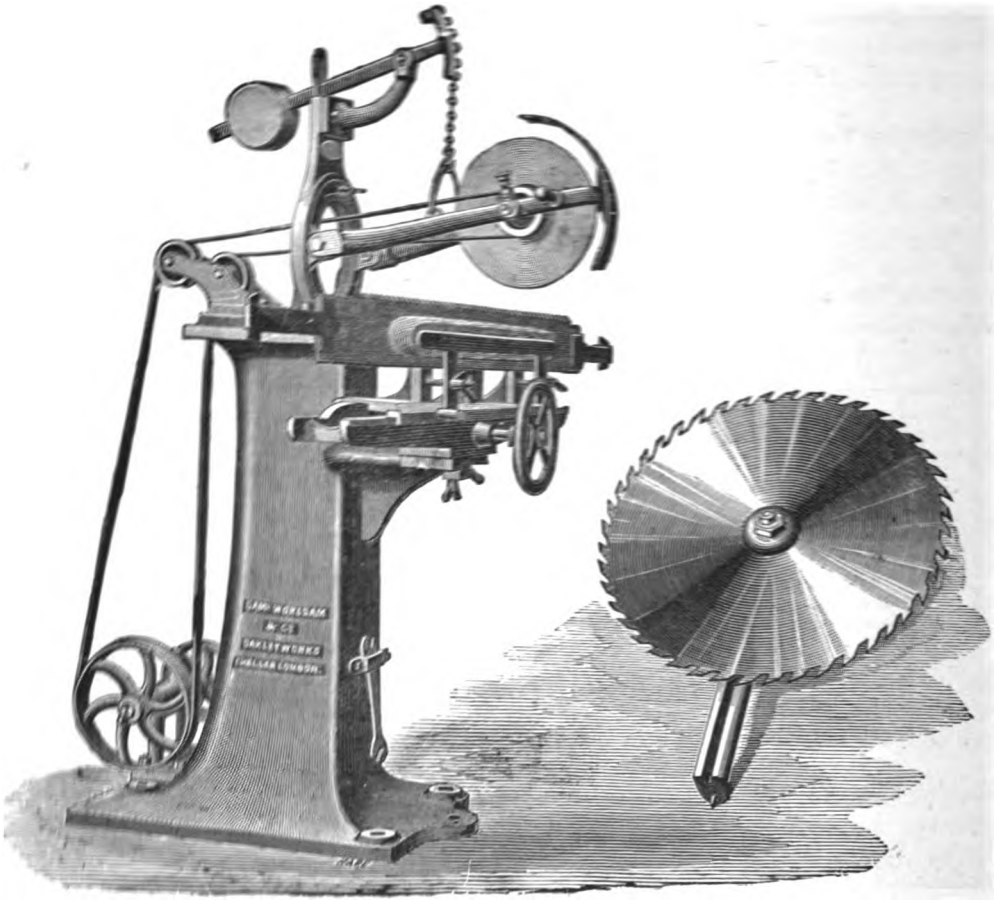
Each Machine is provided with Rising and Falling Spindle and Carriage, filling in Plate, False Fence and Tenoning Clamp, Squaring-off Plate, Driving Pulleys and Spanners, and can also be supplied with the following applliances when required :—

Planing Disc and set of Cutters	£	7	0	0
Drunken Saw Apparatus for Grooving	£	3	0	0
Boring Apparatus	£	6	10	0
Mortising and Boring Apparatus	£	18	0	0
Planing Disc and set of Cutters	£	7	0	0
Intermediate Shaft, with Fast and Loose Pulleys, Driving Rigger, and Standards with gun metal Bearings	£	12	10	0
Cross-cutting Plate	£	2	0	0
Cutter Blocks and Bolts for Moulding	£	2	0	0

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WORSSAM'S

SAW SHARPENING MACHINE.



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WORSSAM'S

SAW SHARPENING MACHINE.

This Machine effects a large saving in Saw Mills in time, labour, and files; one man with the Machine doing nearly as much work as six with the file by hand.

A Disc of consolidated Emery revolves on a Spindle carried by a counter-balanced arm, which can be set to various angles to suit the form of tooth required, and for Gulletting, Topping, Bevelling, &c.

For sharpening Mill Saws a long Vice with a compound table is fixed to the fore part of the Machine, the position of which can be varied so as to bring each tooth of the Saw within easy reach of the cutter.

When Circular Saws are sharpened the Mill Saw Vice is removed and replaced by one as shown in the engraving.

Size.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
Discs 12 inches Diameter, with Vice for Frame Saws... ...	8 cwt.	½ HP.	8 inches	450	£25

Vice for Circular Saws, extra, £3.

The average duration of an Emery Disc in constant action is about two months.

Prices of Emery Discs, 12 inches Diameter.

¼″	5/16″	⅜″	7/16″	½″	⅝″	¼″	⅞″	1″	Thickness.
5/6	6/6	7/6	8/9	10/-	12/6	15/-	18/-	21/-	Each.

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WORSSAM'S

TOOL GRINDING APPARATUS.

This Apparatus is for sharpening Plane, Adze Irons, &c., and consists of a Sandstone on a wrought iron Spindle, revolving in Bearings on a Trough of suitable strength.

A cast iron Disc, 24 inches diameter, carrying Water-of-Ayr Stone segments, is usually keyed on at one end of the Spindle, and revolves in a separate Trough.

The two Troughs are fitted with slides, capable of adjustment to suit the angles of the irons, which are held against the stones.

The Stones are generally supplied 4 feet diameter and 8 inches thick. For joiner's purposes a smaller apparatus with Stone 3 feet diameter and 6 inches thick is sufficient, and the Water-of-Ayr Stone Disc is 20 inches diameter.

Size.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions per minute.	Price.
Stone, 3 feet diameter by 6 inches thick	15 cwt.	½ HP.	18 inches	70	£13 0 0
Water-of-Ayr Stone for ditto, 20 inches diameter, with Trough and Slides, extra	3 cwt.	——	——	—	£ 8 0 0
Stone, 4 feet diameter by 8 inches thick	19 cwt.	1 HP.	20 inches	70	£18 0 0
Water-of-Ayr Stone for ditto, 24 inches diameter	6 cwt.	——	——	—	£ 9 0 0

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WORSSAM'S

MOULDING-IRON GRINDER.

This Moulding-Iron Grinder is for Grinding Irons into various shapes.

The Spindle, revolving in a suitable Trough, is hung with grit stones of various thicknesses and shapes to suit the patterns of Irons required to be ground.

An important improvement in this Machine is the overhanging Spindle, which enables one stone to be substituted for another without taking out the Spindle.

Each stone is supplied with water from a gun metal tap connected with a cistern.

Size.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions per minute.	Price.
4 Stones 12 inches diameter	6 cwt.	½ HP.	8 inches	200	£14 0 0
6 Stones 12 inches diameter	7 cwt.	½ HP.	8 inches	200	£16 0 0

FRAME, OR MILL SAW VICE.

This Apparatus is made wholly of iron, and is intended to be bolted to a bench for use when sharpening Frame Saws.

The jaws work on centres so that the Saw may be placed at any angle.

	ft. in.	ft. in.	Approximate Weight.
Length	2 6	... ... 4 6	1 cwt.
Price	£2 0 0	... ... £3 0 0	

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WORSSAM'S

SLEEPER SAW BENCH.

This Bench is intended for sawing Logs into Sleepers for Railways and Tramways.

The Logs are drawn to the Saw by an endless chain working over Tumblers, actuated by suitable Spur Gearing and carrying loose dogs which abut against the ends of the Logs. As each Log is sawn the dog is removed and placed at the end of another Log, whereby a continuous feed motion is obtained and no time lost.

An Adjustable Fence is provided so that the Bench may be used for ordinary sawing purposes if required.

The production of this Machine is estimated at 200 Sleepers per hour.

Maximum Diameter of Saw.	To Saw.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions of Saw Spindle.	Price.
48 inches	inches deep. 18	2½ tons	6 HP.	20 inches	800	£110

WORSSAM'S

DOUBLE EDGING BENCH.

This Machine is constructed to edge Boards to uniform widths by means of two Saws working in conjunction and adjustable to various widths from 4½ inches to 14 inches by means of a suitable handle.

The Boards are advanced to the Saws by an endless chain, the rate of feed being capable of variation from 40 feet to 80 feet per minute.

Two or three Boards placed together can be edged at the same time.

Maximum Diameter of Saw.	To Saw.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
26 inches	inches deep. 9	2 tons	5 HP.	14 inches	500	£140

One of these Machines will edge as many Boards as can be produced by two of the **Patent Double Timber Frames** described on page 335.

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WORSSAM'S

PLAIN SAW BENCH.

In this Bench the main Standard is cast in one piece to ensure rigidity and strength, and the blocks which carry the Saw Spindle Brasses instead of being cast on are bolted to the underside, so that they can be easily removed for refitting the Brasses when required.

The top of the main Standard is truly planed, and the Fence is adjusted by a square thread screw and hand wheel.

The Saw Spindle is of steel, running in long gun metal bearings, and is provided with Fast and Loose Pulleys. The Loose Pulleys are bushed with the best gun-metal

Maximum Diam. of Saw.	To Saw.	Dimensions of Table.	Approximate Weight.	Average Power.	Diam. of Pulleys.	Revolutions of Saw Spindle.	Price.
	inches deep	ft. in. ft. in.			inches.		
20 inches	7	2 6 by 2 0	9 cwt.	2 HP.	6	1700	£20
24 inches	9	4 6 by 2 6	13 cwt.	3 HP.	12	1500	£24
30 inches	11	5 0 by 2 9	14 cwt.	4 HP.	12	1200	£30
36 inches	14	5 6 by 3 0	16 cwt.	5 HP.	14	1000	£36
42 inches	17	6 0 by 3 0	22 cwt.	7 HP.	14	800	£42
48 inches	20	7 0 by 3 6	26 cwt.	8 HP.	16	700	£48

PRICES OF CIRCULAR SAWS.

Diameter.	B'ham Wire Guage.	Price.	Diameter.	B'ham Wire Guage.	Price.	Diameter.	B'ham Wire Guage.	Price.
inches.		£ s. d.	inches.		£ s. d.	inches.		£ s. d.
4	—	0 4 6	20	14	1 16 0	44	10	10 15 0
4½	—	0 5 0	22	14 T	2 2 0	48	9	13 10 0
5	—	0 6 0	24	13	2 8 0	52	8	21 0 0
6	—	0 7 0	26	13	2 16 0	56	7	28 10 0
7	—	0 8 0	28	12	3 6 0	60	6	34 0 0
8	—	0 9 6	30	12	3 16 0	62	6	38 0 0
9	—	0 11 0	32	12	4 8 0	66	6 F	49 0 0
10	—	0 13 0	34	12 T	5 4 0	72	5	70 0 0
12	17	0 16 0	36	11	6 0 0	74	5	80 0 0
14	17 T	1 0 0	38	11	7 5 0	76	5	91 0 0
16	16	1 4 0	40	11 T	8 0 0	78	5	105 0 0
18	15	1 10 0	42	10 F	9 0 0	80	5 F	111 0 0

Saws stouter than the above Guages are charged extra.

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WORSSAM'S

BOX MAKERS' AND JOINERS' CROSS-CUT BENCH.

This Machine is adapted for Cabinet Makers' and Box Makers' purposes for Cross-cutting Deals and Scantlings; also for Squaring up Panels, Box Sides, and work of a similar character.

The Main Standard is in one piece, the Saw Spindle running in Bearings bolted to the underside which can be easily removed for refitting the Brasses as required.

The stuff to be Cross-cut is placed on a light planed wrought iron Table, capable of being worked to and fro on small rollers inserted into the Main Standard, a suitable Stop and Guage being provided to regulate the length of stuff to be sawn.

Maximum Diam. of Saw.	To Saw up to.	Approximate Weight.	Average Power.	Diam. of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
20 inches	18 inches wide by 6 inches thick	10 cwt.	1 HP.	10 inches	300	£30

WORSSAM'S

SWING ARM CROSS-CUT BENCH.

In this Bench the Saw Spindle works in a Carriage oscillating on a Shaft running in hangers bolted to the bottom of the Main Standard.

The Saw is brought to the work by means of a Pedal and Lever, counterbalanced so as to withdraw itself from the work after each cut of the Saw.

A Stop and Guage are provided to regulate the length of the stuff to be sawn.

Maximum Diam. of Saw.	To Saw up to.	Approximate Weight.	Average Power.	Diam. of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
20 inches	18 inches wide by 6 inches thick	18 cwt.	1 HP.	12 inches	300	£55

If with Self-acting Swing Arm, extra, £25.

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WORSSAM'S

PENDULUM CROSS-CUT SAW.

This Machine is suspended from above, and is intended for general cross-cutting purposes. It may be fixed at the end of a Rack Saw Bench or be suspended above a Wood Table provided with the usual Fence and Guage.

The Saw Spindle revolves at the lower end of an arm oscillating on a Spindle carried by hangers secured overhead. This Spindle is fitted with a Pulley to drive the Saw Spindle, also with Fast and Loose Pulleys which are driven from the rigger on the Main Shaft.

The Arm is counterbalanced so as to withdraw the Saw after each cut.

Maximum Diameter of Saw.	To Saw.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
	inches deep.			inches.		
20 inches	5	5 cwt.	1 HP.	9	350	£25
24 inches	7	6 cwt.	1 HP.	12	350	£30
30 inches	9	7 cwt.	1½ HP.	12	350	£40
36 inches	11	10 cwt.	1½ HP.	14	250	£50
42 inches	13	15 cwt.	2 HP.	14	230	£60

WORSSAM'S

CROSS-CUT SAWING MACHINE FOR HEAVY TIMBER.

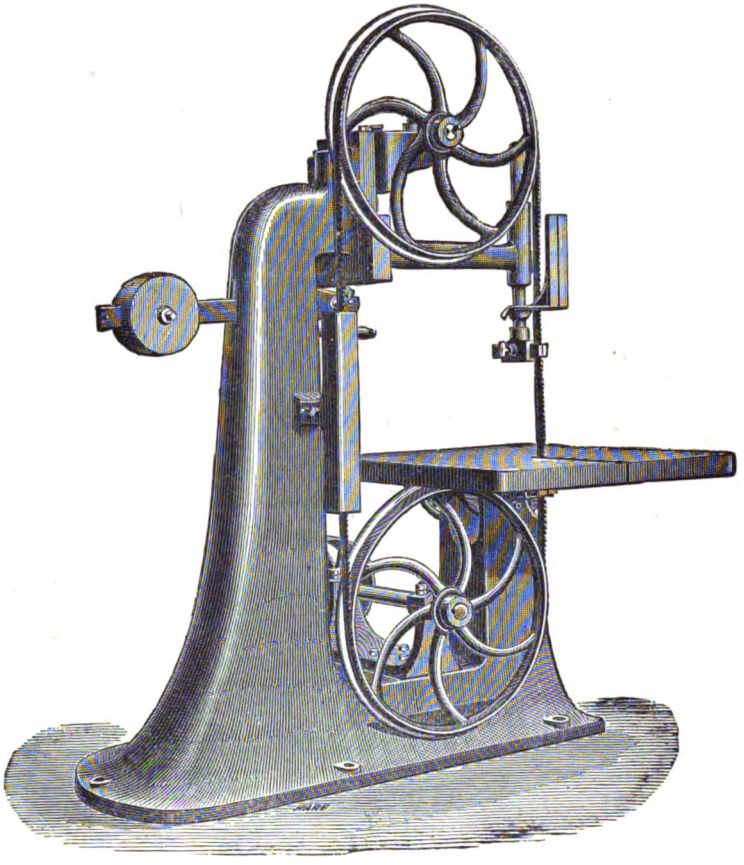
This Machine is designed for Cross-cutting Heavy Timber without necessitating its being lifted on to the Saw Table.

The Saw Spindle is carried by a balanced vibrating Arm, to which an oscillating motion is given by a Hand Wheel.

Maximum Diameter of Saw.	To Saw.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
	inches deep.					
36 inches	12	1 ton	2 HP.	12 inches	300	£100
42 inches	15	1½ tons	3 HP.	14 inches	250	£130
48 inches	18	2 tons	4 HP.	16 inches	200	

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WORSSAM'S
PLAIN BAND SAW MACHINE.



This Machine is used for Sawing Curvilinear Work of almost any character, and is especially useful to Builders, Contractors, Cabinet Makers, Railway Carriage Builders, &c., for Sawing out twisted Hand-rails, Buffer Heads, Break Blocks, Chair Backs, Console Tables; also to Wheelwrights for Felloes and Naves of Wheels, and to Coopers for Staves.

An endless serrated steel band passes over two Pulleys while the material is manipulated in various directions on the table, which is adjustable to different angles for Sawing Bevelled Work.

The Saw is prevented from buckling by passing through guides suitably situated, and a simple arrangement keeps the Saw tight and at the same time allows for contraction and expansion.

Size of Saw Pulleys.	To Saw.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions per minute.	Price.
	inches deep.					
27 inches	12	15 cwt.	1 HP.	12 inches	550	£45
30 inches	16	23 cwt.	2 HP.	14 inches	500	£60
36 inches	18	30 cwt.	3 HP.	16 inches	425	£70
42 inches	20	35 cwt.	4 HP.	16 inches	350	£80

	For 36 in. Machine.	For 42 in. Machine.
Self-Acting Apparatus for Re-Sawing Deals	... ... £30 0 0	... ... £40 0 0

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WORSSAM'S

BAND SAW MACHINE FOR DEALS.

This Machine is somewhat similar in construction to the Plain Band Saw Machine described on the preceding page, differing from it principally in being fitted with an effective arrangement for re-sawing Deals or Flitches.

This arrangement consists of Feed Rollers, carried by Brackets bolted to the Table of the Machine, which serve to advance the Deal to the Saw at rates of feed variable according to the dimensions of the work.

The Roller Apparatus can easily be removed when not required for Sawing Deals.

The Pulleys for carrying the Saw are covered with layers of leather, and the usual Tension Apparatus, Guides, &c., are provided, as is also a Countershaft for giving motion to the Feed Rollers.

Size of Saw Pulleys.	To Saw Deals.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions per minute.	Price.
42 inchs	12 inches deep	2½ tons	4 HP.	16 inches	350	£150

WORSSAM'S

BAND SAW MACHINE,

With Self-acting Canting Table.

The Table of this Machine has a self-acting movement to Saw Hand Rails, Shipwrights', and similar work with varying angles.

The degrees are marked on an index conveniently placed for setting the Table at the different angles, and the Self-acting Apparatus can be regulated according to the nature and dimensions of the work.

The other details are similar in most respects to those of the Plain Band Saw Machine.

Size of Saw Pulleys.	To Saw.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions per minute.	Price.
	inches deep.					
30 inches	16	30 cwt.	2 HP.	14 inches	500	£ 90
36 inches	18	35 cwt.	3 HP.	16 inches	425	£105
42 inches	20	45 cwt.	4 HP.	16 inches	350	£120

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WORSSAM'S

BAND SAW MACHINE FOR LOGS.

The first cost of this Machine for Sawing large Logs is less than that of any Circular Saw Machine of corresponding capacity—it requires less power and is less wasteful of material.

The Saws are manufactured to such perfection that they are not liable to breakage, and even if a Saw does break it can be speedily rejoined without difficulty.

The Saw works like a band round two Pulleys of large diameter, each covered with leather or wood, the upper Spindle being fitted with a counterbalance arrangement which allows for the contraction and expansion of the Saw while working, and very much diminishes the chance of fracture.

It is found in practice that Saws of about three inches in width are better in most respects than those of greater width.

The Log to be operated upon is placed on a Travelling Table to which motion is conveyed by suitable Gearing, the rate of feed being capable of variation from 4 to 25 feet per minute, the back motion being about 80 feet per minute.

An Adjustable Fence is provided for use when Planks or Flitches are to be re-sawn.

Size of Saw Pulleys.	To Saw.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions per minute.	Price.
60 inches	feet deep 4	7 tons	7 HP.	30 inches	250	£300

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WORSSAM'S

BAND SAW SHARPENING FRAME.

This Apparatus is intended for Sharpening and Setting Band Saws, and consists of a light Framework carrying Saw Pulleys covered with leather and revolving on pins, one of which is fixed to a slide capable of adjustment to suit different lengths of Saws.

The Saw is strained over the Pulleys and passes between the jaws of a vice bolted to one side of the Frame, which holds it securely while it is being filed and set.

The Frames are made to suit various lengths as under :—

For Band Saws from	11 feet to 15 feet long	£ 9 0 0
„ „	14 feet to 18 feet long	£10 0 0
„ „	17 feet to 21 feet long	£11 0 0
„ „	20 feet to 24 feet long	£12 0 0
„ „	24 feet to 28 feet long	£14 0 0

WORSSAM'S

BAND SAW BRAZING APPARATUS.

This Apparatus consists of a Portable Forge with Circular Bellows underneath worked by a treadle, the table having receptacles for water, charcoal, &c.

The Blast Pipe is so arranged as to concentrate the blast on the parts to be joined, without overheating and softening the adjacent parts. Each Apparatus includes Hand Vices, Cutting Pliers, Borax, Brazing Wire, &c.

Price £6 0 0

DIRECTIONS FOR BRAZING BAND SAWS.

File the two ends, taper and lap them together by means of light iron wire, then over all bind brass wire. Secure the Saw by means of the Hand Vices to the wrought iron appliance, then moisten the wire with water and cover with borax ; place the Saw over the charcoal fire and work the Bellows till the brass wire melts, then remove the Saw, and when cold file away the residuum and reduce the joint to a level with the body of the blade. Finish off with emery cloth or powder.

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WORSSAM'S

FRET SAW MACHINE.

This Machine is used for Sawing Curves, Fretwork, &c., and is useful to Cabinet, Furniture, and Pianoforte Makers.

It is self-contained, and the Saw can easily be removed or changed to suit different kinds of work and internal curves.

All the Working Parts are counterbalanced, and the length of stroke is capable of variation according to circumstances.

The Saw Tension Apparatus is of simple design, and the top and bottom Vertical Spindles are fitted with effective clips to hold the Saw.

The Table is adjustable to angles for bevel cutting, and as all the working parts are of light construction, the Machine can be worked at a high rate of speed.

Size.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions of Crankshaft.	Price.
To Saw up to 6 inches deep	12 cwt.	1 HP.	8 inches	1000	£42 0 0
To Saw up to 12 inches deep	18 cwt.	1½ HP.	12 inches	800	£50 0 0

WORSSAM'S

FRET SAW MACHINE,

With Overhead Guide.

This Machine resembles the preceding in principle, mainly differing from it in having the Tension Apparatus suspended overhead, whereby a clear and wide range is obtained.

This is an advantage for some classes of work and reduces the cost of the Machine.

All the Working Parts are counterbalanced, and the Table is adjustable to angles for Sawing bevelled work.

Size.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions of Crankshaft.	Price.
To Saw up to 6 in. deep	7 cwt.	1 HP.	8 inches	1000	£35

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WORSSAM'S

IMPROVED TRYING-UP MACHINE.

This Machine is intended for Planing and Trying-up Scantlings of hard and soft wood. The Cutters are secured to a wrought iron adze block, revolving with great velocity, and they may be of any form for Moulding, Beading, Rebating, &c.

The material to be worked is cramped on a cast iron Table, fitted with Screw Cramps three feet apart. The forward Self-acting Feed Motion is speeded at about 15 feet per minute, and the return at about 30 feet per minute.

The Cutter Block Carriage is provided with two pressure Rollers to keep down the stuff when the Cramps are not required, and is raised or lowered by a handle in connection with two side screws.

The Scantlings leave the Machine with a true and smooth surface ready for glueing up no matter how warped or twisted they may be.

A simple Roller Feed Apparatus for floor boards can be added to this Machine if required.

Size.	Length of Table.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
				inches.		
To Plane 12 in. wide	12 feet	2 tons	2 HP.	12	600	£128
To Plane 14 in. wide	12 feet	2½ tons	2 HP.	14	600	£138
To Plane 16 in. wide	15 feet	3½ tons	3 HP.	16	600	£155
To Plane 18 in. wide	15 feet	4 tons	4 HP.	16	600	£205
To Plane 24 in. wide	15 feet	5 tons	5 HP.	16	600	£262

Longer Tables are made for these Machines at the following prices :—

	12 in. Machine.	14 in. Machine.	16 in. Machine.	18 in. Machine.	24 in. Machine.
Per Foot	£4 0 0	£4 0 0	£6 0 0	£6 0 0	£8 0 0

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WORSSAM'S

SURFACING AND TRYING-UP MACHINE.

This Surfacing and Trying-up Machine is an extension of the Trying-up Machine described on the previous page, differing only in the mode of cutting and the arrangement of the tools.

It is well adapted for Planing large Surfaces such as tops for Tables, Dressers, Counters, Pianofortes, &c.; also for Panels and Doors.

The Cutters are so arranged that the material can be worked lengthwise or across the grain, and they can be easily adjusted for cutting hard or soft wood.

The material is secured on a cast iron Table, fitted at intervals with Screw Cramps and Dogs, the Table being actuated by a Self-acting Feed Motion at variable rates by means of Gearing and Cone Pulleys.

The Cutters revolve in a Horizontal Plane, and Pressure Apparatus is provided at the back and front of the Cutters to keep the material well down on the Table.

The Carriage for the Cutters is raised or lowered by a Crank Handle, placed within easy reach of the workman, and acting upon square threaded screws and bevel gearing.

The Machine is adapted for large or small work.

Size.	Length of Table.	Approximate Weight.	Average Power.	Diam. of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
To Plane 3′ 0″ wide	15 feet	7 tons	3 HP.	16 inches	550	£340
To Plane 3′ 6″ wide	20 feet	8 tons	3 HP.	20 inches	500	£420

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WORSSAM'S

PATENT COMBINED PLANING, MOULDING, AND TRYING-UP MACHINE.

By this Combined Machine, Floor Boards, &c., can be Planed, Edged, and Grooved; Mouldings cut to different forms, and Scantlings trued-up, combining very effectively the operations of Planing, Moulding, and Trying-up.

A Carriage containing a pair of Feed Rollers and two vertical Spindles for side cutters is added to the ordinary Trying-up Machine, and works on a slide in a plane parallel to the main adze block and at right angles to the gantry of the Machine.

The Carriage is not used for Trying-up stuff, but remains on its slide far enough back from the Machine to clear the Travelling Table; but when Floor Boards, &c., are to be planed, or Mouldings cut, the Travelling Table remains stationary, the Carriage is drawn forward in front of the main adze block, and the stuff is fed through the Rollers and Cutters as usual.

The rate of feed can be regulated to suit the material under operation.

Size.	Length of Table.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions of Countershaft.	Price.
To Plane 14 inches wide	12 feet	4 tons	2 HP.	14 inches	600	£250
To Plane 18 inches wide	15 feet	6 tons	4 HP.	16 inches	600	£350

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WORSSAM'S

COMBINED JOINERS' BENCH AND MOULDING MACHINE.

This Machine is very useful for Sawing, Grooving, Rebating, Moulding, Planing, &c.

The Main Standard is in one casting, fitted with a Fence adjustable by Screw and Hand Wheel.

The Saw Spindle can be raised or lowered for Grooving, Rebating, &c., by means of a handle placed within easy reach of the workman.

The Planing and Moulding Apparatus are at the opposite side of the Machine, comprising the Cutter Block and a Table which may be raised or lowered.

The material is advanced to the Cutters by a Self-acting Feed Roller actuated by suitable Gearing, the rate of feed being capable of variation according to the dimensions and nature of the stuff.

Top and Side Pressure Apparatus is provided to hold the material in its place while under the action of the Cutters.

Maximum Diameter of Saw.	To Saw.	To Plane.	Approximate Weight.	Average Power.	Diam. of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
	inches deep.	in. in.					
24 inches	9	7 by 3	15 cwt.	3 HP.	12 inches	600	£ 80
30 inches	11	7 by 3	19 cwt.	4 HP.	12 inches	600	£ 90
36 inches	14	9 by 3	23 cwt.	5 HP.	14 inches	600	£100

Intermediate Shaft, with Pulleys and Pedestals, extra, £9.

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WORSSAM'S

COMBINED JOINERS' BENCH AND TENONING MACHINE.

This Machine is similar in most respects to the one described on the preceding page, mainly differing from it in having a Tenoning Machine in lieu of the Moulding and Planing Apparatus on the opposite side.

The Saw Spindle revolves in gun metal Bearings, and can be raised or lowered for Grooving and Rebating.

An Adjustable Fence is provided to suit different widths of work to be sawn.

The Tenoning Apparatus consists of Cutter Blocks keyed on to Spindles and capable of being closed or expanded according to the required thickness of the Tenons.

The material is carried by a Table sliding on a light iron framing.

The Machine is suitable for Sawing, Grooving, Rebating, Tenoning, &c.

Maximum Diameter of Saw.	To Saw.	To Tenon up to.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
	inches deep.	Wide. in. Thick. in.					
24 inches	9	12 by 3	15 cwt.	3 HP.	12 inches	600	£70
30 inches	11	12 by 3	19 cwt.	4 HP.	12 inches	600	£80
36 inches	14	12 by 3	23 cwt.	5 HP.	14 inches	600	£90

Intermediate Shaft, with Pulleys and Pedestals, extra, £9.

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WORSSAM'S

FOUR-CUTTER OUTSIDE MOULDING MACHINE.

In this Machine the Cutter Blocks are placed outside the cast iron Standard which renders them more accessible than when working between Bearings.

All four sides of the wood are worked at one operation.

The upper block revolves in Bearings on the Standard, whilst the bottom and two side blocks are carried by a Table capable of being raised or lowered by a Screw and Hand Wheel to suit different thicknesses of work.

The bottom Cutter being in advance gives the stuff a true face to work upon whilst passing between the top and side Cutters.

The Feed Motion consists of a pair of Rollers, actuated by suitable Gearing, the rate of feed being capable of variation to suit the nature and dimensions of the work. Suitable means are provided by which the Feed Motion may be arrested without stopping the Machine.

Countershaft, Driving Pulleys, and Fast and Loose Riggers are supplied with each Machine.

Size to Mould up to.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
4 inches wide by 2 inches thick	20 cwt.	2 HP.	10 inches	900	£ 95
7 inches wide by 3 inches thick	25 cwt.	3 HP.	12 inches	900	£125
9 inches wide by 3 inches thick	35 cwt.	4 HP.	12 inches	900	£160

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WORSSAM'S

MORTISING MACHINE.

With Rising and Falling Table.

This Machine consists of a Vertical Standard carrying a Table capable of being raised or lowered by a Treadle, which gradually raises the work to the Chisel. The stuff is thus penetrated by degrees to the requisite depth, and the vibration of the Machine is consequently much less than when the Chisel enters the full depth at one stroke.

The Machine is capable of Mortising holes in stuff up to 11 inches deep by three inches thick.

The Chisel is reciprocated by means of a Connecting Rod leading from a Disc revolving at the bottom of the Standard, and is reversed by a simple and effective arrangement.

Boring Apparatus can be supplied if required.

To Mortise up to.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions per minute.	Price.
11 in. deep by 3 in. thick	15 cwt.	1 HP.	10 inches	300	£60

Boring Apparatus, extra, £10.

WORSSAM'S

HORIZONTAL MORTISING AND BORING MACHINE.

In this Machine the Table is worked to the Mortising Tool at each stroke of a Hand Lever, and is fitted with stops to regulate the length and depth of the Mortises.

For Boring, an Auger is usually substituted for the twisted Mortise Tool, but this is not absolutely necessary, as the latter may be used for either operation.

The wood to be Bored is cramped upon a Planed Table carried by a bracket bolted to the main Standard of the Machine, which can be raised or lowered as may be necessary.

To Bore or Mortise up to.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
9 in. wide by 9 in. thick	15 cwt.	1 HP.	12 inches	500	£40

Countershaft, with Pulleys and Pedestals, £10

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WORSSAM'S

MORTISING MACHINE,

With Rising and Falling Slide.

This Mortising Machine will Mortise stuff up to 11 inches deep by 3 inches thick.

The Chisel Spindle, with Connecting Rod, Fly-wheel, and Driving Pulleys, is carried by a slide at the upper end of a strong hollow cast iron Standard. The Slide is connected by a Rod to a Foot Lever, and can be lowered to enable the Chisel to enter gradually into the stuff, working deeper and deeper at each stroke to the desired depth.

As soon as the foot is removed from the Treadle, which is counterbalanced, the Slide will rise and free the Chisel from the work.

The Table to receive the woodwork is fitted with a Slide and Hand Wheel, and suitable means are provided to prevent the work from rising with the Chisel. A simple arrangement is employed for reversing the Chisel, placed within easy reach of the workman.

When hard wood is to be mortised, the work is considerably facilitated by boring two or three holes before using the Chisel.

To Mortise Stuff up to.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions per minute.	Price.
11 in. deep by 3 in. thick	20 cwt.	1 HP.	10 inches	200	£70

Boring Apparatus, extra, £15.

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WORSSAM'S

WALL BORING MACHINE.

Where space is limited this is a convenient form of Boring Machine, being easily attached to the Mill wall by a few bolts.

The Boring Table is fitted with Rollers which facilitate the movement and adjustment of the timber under operation.

The Boring Spindle is driven by Bevel Gearing and Fast and Loose Pulleys, and is raised or lowered by a handle working a Pulley leading by a band to an Overhead Pulley, which actuates a suitable Rack and Pinion.

The Boring Spindle is counterbalanced by a weight passing down in front of or at the back of the wall.

To Bore holes up to.	Approximate Weight.	Average Power.	Diameter of Pulleys.	Revolutions per minute.	Price.
12 inches deep by 3 inches diameter	12 cwt.	1 HP.	12 inches	600	£75 0 0
16 inches deep by 3 inches diameter	16 cwt.	1 HP.	12 inches	600	£90 0 0

WORSSAM'S

COLUMN BORING MACHINE.

This Machine is adapted for Boring heavy timber.

The timber is placed on a Carriage with wheels running on rails, and may be brought to any longitudinal position under the Auger.

The Boring Spindle revolves in a Slide, carried by a strong cast iron hollow Standard, and is capable of lateral movement by means of a Screw and Hand Wheel.

Motion is given to the Spindle through Bevel Gearing, and it is raised and lowered by a Counterbalanced Lever.

To Bore holes up to.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
12 inches deep by 3 inches diameter	20 cwt.	1 HP.	18 inches	600	£80 0 0
16 inches deep by 3 inches diameter	25 cwt.	1 HP.	18 inches	600	£95 0 0

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WOOD LATHE.

This Lathe is well adapted for general use, and is suitable for Turning Wood or Iron.

The overhead Shaft is provided with Fast and Loose Pulleys and Three Motion Cone, and the necessary Chucks and Hand Rests are supplied with the Machine.

Size.	Length of Bed.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
4 inches centre	6 feet	12 cwt.	¼ HP.	6 inches	800	£25
6 inches centre	8 feet	14 cwt.	¼ HP.	8 inches	750	£30
8 inches centre	8 feet	18 cwt.	½ HP.	10 inches	700	£35
10 inches centre	10 feet	22 cwt.	½ HP.	10 inches	700	£40
12 inches centre	12 feet	25 cwt.	1 HP.	12 inches	600	£50

EXTRA LENGTH OF BED FOR WOOD LATHE.

For 4 inch Lathe at per foot	... ...	£1	5 0
For 6 inch „ „	... ...	£1	10 0
For 8 inch „ „	... ...	£1	15 0
For 10 inch „ „	... ...	£2	0 0
For 12 inch „ „	... ...	£2	5 0

These Lathes can be supplied with overhanging Face-plate, Floor Standard, and Rest for turning work of large diameter at an additional cost of about 15 per cent.

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WORSSAM'S

SELF-ACTING WOOD LATHE.

This Lathe has a Self-acting Slide Rest, Overhead Motion, fitted with Cone Pulley and Fast and Loose Pulleys. The Tool Holder can be adjusted in various positions.

Suitable Chucks and Hand Rests are provided with the Machine.

Size.	Length of Bed.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
4 inches centre	6 feet	12 cwt.	¼ HP.	6 inches	800	£ 50
6 inches centre	8 feet	14 cwt.	¼ HP.	8 inches	750	£ 60
8 inches centre	8 feet	18 cwt.	⅓ HP.	10 inches	700	£ 80
10 inches centre	10 feet	22 cwt.	½ HP.	10 inches	700	£ 95
12 inches centre	12 feet	25 cwt.	1 HP.	12 inches	600	£110

Extra Length of Bed for Self-acting Wood Lathe.

For 4 inch Lathe at per foot	... ...	£1	7 6
For 6 inch „ „	... ...	£1	15 0
For 8 inch „ „	... ...	£2	2 6
For 10 inch „ „	... ...	£2	10 0
For 12 inch „ „	... ...	£3	0 0

If required, any of the above can be supplied with longer Bed, Face-plate overhanging end of Bed, and independent Standard Tool Holder.

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WORSSAM'S

ROUNDING MACHINE.

This Machine is designed for Turning Round Parallel Rods of hard or soft Wood, such as Curtain Poles, Broom Handles, &c.

It consists of a cast iron Bed on Standards, carrying a Head Stock in which revolves a Hollow Mandril, fitted with Cutters at each end, which are driven by a Countershaft below the Machine Bed.

The material is fed through the Mandril by a pair of Rollers in front of the Cutters, driven by Self-acting Gear, while a second pair hold it in position after it has passed the Cutter.

The Rods, &c., are rough-turned and finished at one operation.

The speed of the Feed Rollers can be regulated by suitable means according to the nature of the work.

Size.	Approximate Weight.	Average Power.	Diameter of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
To round up to 2 inches diameter	12 cwt.	1 HP.	10 inches	600	£65 0 0
To round up to 3 inches diameter	15 cwt.	2 HP.	12 inches	500	£75 0 0

SAW SPINDLES AND FRAMES.

These Saw Spindles and Frames can be attached to the underside of an ordinary Wood-framed Saw Bench. The Frames are fitted with best hard gun metal Bearings which carry the Spindles, and are also provided with Driving Pulleys, Loose Collar, and Tightening Nuts.

For Saws up to 16 inches diameter	... ...	£ 5	0 0
,, ,, 20 inches ,,	... ...	£ 6	0 0
,, ,, 24 inches ,,	... ...	£ 7	0 0
,, ,, 30 inches ,,	... ...	£ 8	0 0
,, ,, 36 inches ,,	... ...	£ 9	0 0
,, ,, 42 inches ,,	... ...	£11	0 0
,, ,, 48 inches ,,	... ...	£12	0 0

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WORSSAM'S

SPOKE-SHAPING MACHINE.

This Machine is specially designed for Shaping Wheel Spokes, but it may be used with equal advantage for forming Hammer Shafts, Pick and Axe Handles, Gun Stocks, &c.

The various forms are cut to the exact shape of an iron Pattern or Template by means of suitable Cutters revolving in a Vibrating Arm in front of the Machine, connected with a corresponding Arm carrying a Friction Roller between the work and the Template, so that the wood is cut to the same shape as the Pattern exactly.

The Cutters work in the direction of the grain of the wood, and are driven by an Overhead Drum, which allows the belt to travel the full length of the work.

The iron Pattern and the piece to be shaped are held between centres and made to rotate at the same speed, and in the same direction, by suitable Spur Gearing.

The Vibrating Arms can be traversed in either direction by means of a square threaded Screw and Bevel Gearing, and the Traversing Motion can be thrown in and out of gear without stopping the Machine and without the aid of the operator.

Very little sand papering or buffing is required to complete the goods; the action of the Machine being very perfect.

Approximate Weight.	Average Power.	Diam. of Pulleys on Countershaft.	Revolutions of Countershaft.	Price.
20 cwt.	2 HP.	8 inches	750	£85

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SPEEDS OF WOOD WORKING MACHINERY.

	Feet per minute.
Teeth of Band Saws	4,000
Cutting edges of Moulding and Planing Irons	6,000
Teeth of Circular Saws	9,000
Emery Discs at periphery	4,000

REYNOLD'S

VENETIAN BLIND LATH PUNCHING MACHINE.

This Machine is very useful for Venetian Blind Makers. It is provided with side and end guides so that the holes punched come under each other with perfect accuracy. The holes are perfectly formed and quite clean on both sides.

Price, complete £1 15 0

REYNOLD'S

COMBINED CIRCULAR AND BAND SAWING MACHINE.

This Machine is useful to Joiners, Pattern Makers, Wheelwrights, Cabinet Makers, &c., and will cut timber up to five inches thick.

The Band and Circular Saws are fixed on opposite sides of the Table so as not to interfere with each other in working.

The Band Saw passes over the Fly-wheel as well as the two Pulleys, thereby securing greater uniformity in tension and less liabilty to break.

The Circular Saw can be easily raised or lowered for Rebating, Grooving, &c.

Price, complete, with Saws		£24 0 0
Fast and Loose Pulleys for Steam Power	extra	£ 1 0 0
Boring Apparatus...	extra	£ 3 0 0

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REYNOLD'S

IMPERIAL PATENT HAND POWER BAND SAW MACHINE.

This Machine is fitted with a Patent Tension Motion to allow of expansion or contraction of Saw whilst working.

The Table is made adjustable to cut work on the Bevel when required, and it is also fitted with an Angle Bracket to be used when Tenoning.

Price, with Angle Bracket for Tenoning and one $\frac{3}{8}$ inch Saw £12 12 0

If made to work by Steam Power, with a pair of 9 inch Pulleys placed behind Fly-wheel ... ... extra £ 1 1 0

Will admit work 11 inches deep. Approximate Weight 5 cwt.

REYNOLD'S

CONTRACTORS CIRCULAR SAW BENCH.

This Bench is well adapted for the requirements of Builders and Contractors, being light and serviceable.

The Fence is adjustable and made to cant to any angle for feather edging. It can also be turned off the Table for cross cutting.

Rollers are provided at each end of the Table to facilitate moving the wood on and off.

No.	Dimensions of Tables.	Diam. of Saw.	Depth it will cut.	Revolutions of Saw per min.	Approximate Weight.	Pulleys.		Price, with Saw.	
						Diam.	Width.	With Fixed Spindle.	With Rising and Falling Spindle.
	ft. in. ft. in.	inches.	inches.			in.	in.		
1	3 6 by 1 6	18	7	1500	5 cwt.	6	$3\frac{1}{2}$	£12 10 0	£20 0 0
2	4 0 by 2 0	24	9	1100	7 cwt.	9	4	£19 0 0	£29 0 0
3	5 0 by 2 6	30	11	900	$8\frac{1}{2}$ cwt.	10	4	£22 10 0	£35 0 0

These Benches are slotted to take a Saw 6 inches larger in diameter than the dimensions given above.

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REYNOLD'S

IMPERIAL CIRCULAR SAW BENCH FOR HAND POWER.

Approximate Weight 6 Cwt.

Price complete, with 9 inch and 14 inch Circular Saws and Rising and Falling Spindle		£14	10 0
Fast and Loose Pulleys for Steam Power ... ...extra		£ 1	0 0

REYNOLD'S

"COMBINATION" PATENT HAND POWER CIRCULAR AND BAND SAWING MACHINE.

Approximate Weight 8 Cwt.

Price complete, with 9 inch and 14 inch Circular Saws, one $\frac{3}{8}$ inch Band Saw, and Rising and Falling Spindle		£22	0 0
If adapted for Steam Power, so that both Saws can be used at once, with Fast and Loose Pulleys...	extra	£ 2	0 0
Boring Apparatus...	extra	£ 2	0 0

REYNOLD'S

"MONARCH" HAND MORTISING MACHINE.

Price, with 7 Chisels and 2 Core Drivers		£12	0 0
Tenoning Tool	extra	£ 2	0 0
Boring Apparatus, with $\frac{3}{8}$, $\frac{1}{2}$, and $\frac{5}{8}$ inch Countersinks, $\frac{5}{8}$ Centre Bit, and $\frac{1}{2}$ and $\frac{3}{4}$ Augers...		£ 1	10 0

Approximate Weight 3 Cwt.

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REYNOLD'S

DOUBLE ACTION MORTISING, CORE DRIVING, AND BORING MACHINE, "THE LONDON."

In this Machine great strength and lightness are obtained by an ingenious arrangement of the Levers, whereby the power is developed at the base of the Machine instead of on the Standard.

Only one fixing of the wood is necessary for both Mortising and Core Driving, or for Boring the holes at the end of the Mortises in hard wood; an arrangement which saves time in working and requires much less room for stacking the timber than the old plan, in which it was necessary to fix and Mortise the wood and then place it on one side for Core Driving; and afterwards to re-fix and drive out the core, thus necessitating twice handling and fixing, besides requiring considerable space to stack the wood half finished.

This is effected by means of two Plungers side by side, one for the Mortising Chisel and the other for the Core Driver and the Boring Apparatus, both of which last mentioned tools fit into the same socket.

The Boring Bit is worked by a cranked Handle and a pair of Mitre Wheels on the side of the Machine; when the Plunger is used for Core Driving the Bit is removed and a suitable tool inserted.

Price, with 8 Chisels, 2 Core Drivers, 5 Augers, and 2 Drills £18 18 0

Approximate Weight 4 Cwt.

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REYNOLD'S

"ECLIPSE" NEW PATENT MORTISING MACHINE.

The Hand Lever of this Machine is connected to the Carriage of the Chisel Spindle by an Articulated Elbow or Toggle movement, the action of which not only produces the requisite vertical motion of the Chisel, but gives it an increased power as it penetrates deeper and deeper into the material.

The uniform depth of Mortises not required to pass through the wood is regulated in a very simple and efficient manner by making that part adjustable, which carries the Chisel Spindle of the fulcrum of the Lever.

The Lever is always brought down to the lowest point, but the desired uniformity of depth of the Mortise is obtained with great certainty by this method and with less trouble than in other Machines made for this purpose.

Price, complete, with 8 Chisels and 2 Core Drivers £16 16 0

Approximate Weight 4 cwt.

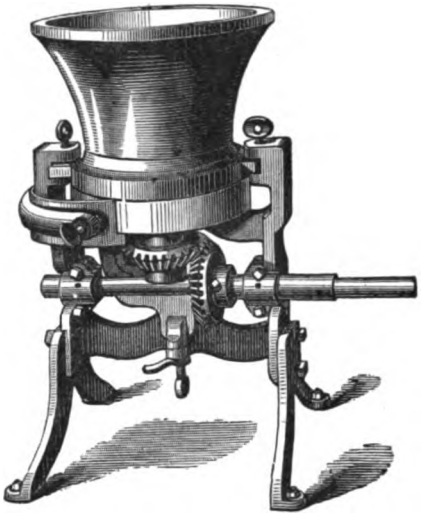
NETTING FOR FRUIT TREES.

Per 100 Yards 1 yard wide	£0	6 0
„ „ 2 yards wide	£0	12 0
„ „ 4 yards wide	£1	3 0

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FOLLOWS & BATES'

IMPROVED PAINT MILLS.



These Mills are of great value for grinding and mixing Paint. They save both time and material.

PRICES:—

No. 0	For Hand Power only	£2 15 0
No. 1	For Hand, with Fly-wheel	£4 4 0
No. 1	For Power, with Fast and Loose Pulleys	£5 5 0
No. 1	For Hand and Power, with Fast and Loose Pulleys and Fly-wheel	£5 15 0
No. 2	For Hand, with Fly-wheel	£6 0 0
No. 2	For Power, with Fast and Loose Pulleys	£6 15 0
No. 2	For Power, without Pulleys	£5 5 0

No. 1 is the most suitable size for working either by Hand or Steam Power.

WEIGHTS AND CAPACITIES OF PAINT MILLS.

	Approximate Weight. qr. lbs.	Diameter of Grinding Surface.	Capacity of Hopper.	Weight of Fly-wheels. qr. lbs.
No. 0	1 0	5½ inches	½ gallon	—
No. 1	2 6	7 inches	1 gallon	1 10
No. 2	3 18	10 inches	2 gallon	1 24

RANSOME'S PAINT MILLS.

No. A.	A very handy little Mill for general purposes where small quantities are required	£ 1 0 0
No. B.	For Hand Power, will grind about 5 cwt. in 10 hours	£ 7 0 0
No. B.	For Steam Power	£ 7 16 0
No. C.	For Hand Power	£ 2 2 0
No. D.	For Hand and Power, will grind about 5 cwt. in 12 hours by Steam Power, a very strong Mill	£10 15 0

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CARSON'S ANTI-CORROSION PAINTS

Are specially prepared for protecting all kinds of out-door work, and are equally suitable for every description of Iron, Wood, Stone, Brick, Compo, Conservatories, Greenhouses, Frames, &c.

They are sent out in powder and require neither grinding nor tinting, and will keep for any length of time in all climates.

Walls of soft Bricks or porous Stones may be made impervious to damp by a careful application of Anti-Corrosion Paint in fine weather when all the damp has been dried out.

These Paints are also suitable for Park Fencing, Gates, Farm and other Buildings, Carts and Wagons, Iron Hurdles, Roofing, Farm Implements, &c.

DIRECTIONS FOR USE.

Mixing, for Outdoor Work.

The **Anti-Corrosion Paint** is a Powder, and all the preparation needed before using it is to mix the Dry Colour with the necessary quantities of Oil, &c., as follows :—

White, Stone Colours, Lead Colours, Purple Brown, or Blue, require to each Cwt. of Dry Colour, 6 gallons Raw Linseed Oil, 1 gallon Boiled Linseed Oil, 1 gallon Turpentine; total, 8 gallons. Or 7 lbs. of Powder to ½ gallon of Mixture.

Buff, Chocolate, or Oak Colour, require to each Cwt. of Dry Colour, 7½ gallons Raw Linseed Oil, 1½ gallons Boiled Linseed Oil, 1¼ gallons Turpentine; total, 10 gallons. Or 5⅝ lbs. of Powder to ½ gallon of Mixture.

Bright Medium, Deep or Invisible Green, or Reds, require to each Cwt. of Dry Colour, 5 gallons Raw Linseed Oil, 3 gallons Boiled Linseed Oil; total, 8 gallons. Or 7 lbs. of Powder to half gallon of Mixture.

Bronze Green, or Black, require to each Cwt. of Dry Colour, 6 gallons Raw Linseed Oil, 4 gallons Boiled Linseed Oil; total, 10 gallons. Or 5¾ lbs. of Powder to ½ gallon of Mixture.

The Powder contains all necessary driers.

It is important to keep the Paint well stirred during use, to prevent settlement; but should any sediment take place, it *must not* be thinned with Oil and used in the ordinary manner, but had better be mixed with another potful of Paint. Paint Pots, fitted with a mixer, are expressly constructed for mixing the Paint and keeping it properly stirred. In preparing the Anti-Corrosion for use, the Oil Mixture should be *first* poured into the paint-pot, the necessary Powder then added, and the whole stirred together until incorporated. **The Paint should be mixed at least 24 hours before it is used, as it will then go farther and dry quicker.**

Price of Paint Pots, with Mixer, 3/- each.

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CARSON'S ANTI-CORROSION PAINTS.

DIRECTIONS FOR USE (CONTINUED).

Preparation of Work.

All rust, distemper, decayed and loose paint, should be removed before painting. Where it is necessary entirely to remove old paint, the new preparation, Detergent, is strongly recommended. Work wetted by rain must be allowed to dry before the paint is applied, or it is apt to blister. Paint should *never* be used on work to which Black Varnish or Tar has been applied.

Priming.

When painting New Work, Cement, Stucco, or where there is much absorption, it is advisable either to use the first coat very thin or apply a coating of the **Priming Colour**, supplied at 28s. per cwt., mixed with Boiled Oil, in the proportion of 12 gallons of Oil to 1 cwt. of Priming.

When painting **Green, Blue, or Black**, it is strongly recommended to use **Light Lead Colour** for the first, and where necessary, for second coat also.

The Light Lead must always be used as Priming for Green on new Ironwork.

Application.

The work being properly cleaned and *dry*, each coat of Paint should be laid on equally and evenly, and well spread with the brush, small brushfuls being taken at a time. No succeeding coat must be applied till the previous one is sufficiently hard; neither should a light colour be used over a dark one.

Number of Coats Required.

For new Ironwork and work of every description which has been before painted, two coats are sufficient; new Woodwork requires three coats; and porous substances, such as Brick, Stucco, Soft Stone, &c., four coats.

Surface Covered.

One cwt. of the Paint in powder mixed with its proper proportion of Oil Mixture covers, once over, on :—

Porous Stone or Brick	about 250 Square Yards.
Compo, Cement, and Stone	300 to 400 ,,
Woodwork	400 to 500 ,,
Ironwork	600 to 700 ,,

Detergent, for Removing Old Paint.

This Composition, by a harmless chemical action, renders Paint easy of removal without injury to the material forming the ground.

Diluted with water it is also the best material for cleaning Old Paint or anything very dirty and greasy.

After the application of the Extract, the Paint can be removed in about twenty minutes.

Price 5s. per Gallon, Jar included.

BRUSHES.—For the better application of the **Detergent**, two special Brushes (one to apply the Extract, the other to remove the old paint) are supplied at 2s. 6d. the pair.

NOTE.—This preparation must be stored in a warm place during cold weather, or it will crystallize.

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PRICES OF CARSON'S ANTI-CORROSION PAINTS,

For Exterior Use.

Bath Stone	per cwt.	£1 12	0
Brown Stone	„	£1 12	0
Grey Stone	„	£1 12	0
Light Stone	„	£1 12	0
Light Portland Stone	„	£1 12	0
Portland Stone	„	£1 12	0
Black	„	£1 1	0
Blue	„	£2 2	0
Bright Green	„	£2 2	0
Bright Red	„	£1 6	0
Bronze Green	„	£1 8	0
Chocolate	„	£1 1	0
Dark Red	„	£1 6	0
Deep Green	„	£2 2	0
Lead Colour	„	£1 6	0
Light Lead Colour	„	£1 8	0
Medium Green	„	£2 2	0
Oak Colour	„	£1 6	0
White	„	£1 12	0

The durability of Paint depends very much on the use of pure Oils in its preparation. Carson's **Oil Mixture** is composed of Linseed Oil from Baltic Ports and pure American Turpentine, and contains everything necessary for the proper preparation of the paint, no driers or other additions being required. Price, per gallon, 3s. 3d.

For proportions to be used see page 386.

PAINT BRUSHES.

For Surface Work.	Each. s.	d.
Large Round Brushes	3	6
„ Oval „	3	6
Small Brushes, Round or Oval	2	6
Dusting Brushes	3	6

For Picking Out.	Each. s.	d.
Sash Tools, Large	1	3
„ Medium	0	9
„ Small	0	6
Varnish Brushes, White	3	0

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CARSON'S TINTS,

For Interior Use.

These Paints are prepared from pigments of the finest quality without admixture of Barium or Baryta, Magnesia, or any cheap or inferior ingredients.

They are almost free from unpleasant smell, and require no preparation beyond the simple Mixture with the Oils in the proportions hereafter mentioned.

Possessing great body and covering power, their extreme fineness, smoothness, and beauty of surface render these tints well adapted for the **Finest Interior Decoration.**

Any person with a little practice can produce good results by following the directions for use.

Directions for Use.

These Colours are prepared in a dry powder, and to render them ready for use it is merely necessary to add the Oil Mixture as below.

One cwt. of Powder requires 8 gallons of Oil Mixture, or 7 lbs. to ½ gallon.

Mixture.

Mix the Powder and Oil in the above proportions, but not at first using the whole of the Mixture. Allow the Paint to stand for twenty-four hours, and then add the remaining Oil, and stir thoroughly—it is then fit for use.

Cleaning.

Before painting it is necessary to see that the work is quite clean and free from grease; all parts that have been handled must be washed with soda and water, or with a weak solution of Detergent (see page 387), which is *invaluable* for paint-cleaning.

Number of Coats.

When painting old work in two coats, use for the first coat No. 2 Mixture; for the second, No 1 Mixture.

When three coats—First, No. 2; second, No. 2; third, No. 1.

For new work in four coats—First, No. 1; second, No. 1; third, No. 2; fourth, No. 1.

The above will produce a bright and glossy surface; if, however, a dull or flatted finish is desired, it is produced by proceeding as above, and then adding an extra coat of No. 2 Mixture. A "dead flat" is produced by the use of a Mixture of 6 of Turps to 2 of Oil. Some previous experience and skill are necessary for correct flatting. Use priming for first coat of new work when not less than four, in all, are to be given.

Remarks.

Any colour may be reduced in tint by the addition of No. 1 White, but it is not advisable to mix any of the others, as the delicacy of shade may be destroyed.

No. 10 Light Sage is well suited for giving a more cheerful air to a dark room, as it reflects the rays of light. This colour is too delicate for flatting, No. 8 Green Tint should be used as a substitute.

No. 9 French Grey is only suitable for a room where there is much light, as it is an absorbent of light.

No. 5 Buff Tint for panels, with No. 6 Salmon Tint for the stiles, forms a beautiful contrast. Nos. 2 Stone Colour and 5 Buff, or 3 Light Drab, and 4 Drab, can be used in the same way, as may also the darker shades.

Oil Mixtures.

No. 1; 6 gallons Pale Boiled Oil, to 2 gallons Turpentine. No. 2; 3½ gallons Pale Boiled Oil, to 4½ gallons Turpentine.

Prices of Tints for Interior Use.

No. 7. Blue Tint	per cwt.	£1	18	0	No. 11. Grey Tint	per cwt.	£1	18	0
No. 5. Buff Tint for Stables ...	,,	£1	16	0	No. 22. Implement Blue	,,	£3	0	0
No. 21. Chinese Red	,,	£3	12	0	No. 10. Light Sage...	,,	£1	18	0
No. 25. Dark Lavender...	,,	£1	16	0	No. 24. Oak Brown	,,	£1	16	0
No. 23. Deep Purple	,,	£3	0	0	No. 13. Olive Green	,,	£1	18	0
No. 4. Drab, & Light Drab No. 3.	,,	£1	16	0	No. 6. Salmon Tint	,,	£1	18	0
No. 12. Fawn	,,	£1	16	0	No. 2. Stone Colour	,,	£1	16	0
No. 9. French Grey	,,	£1	18	0	No. 26. Quaker Green	,,	£1	16	0
No. 8. Green Tint	,,	£1	18	0	No. 1. White...	,,	£1	18	0

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ROLLIN'S

AMERICAN PERAMBULATORS.

These Perambulators have two wheels in front and two behind. The two front wheels prevent the Carriage from tipping sideways when the hind wheels are raised from the ground.

The Wheels are of large diameter, and the Perambulators are light, strong, and elegant in appearance. The Hoods can be readily adjusted as desired.

No. 3.	Single Perambulator, lined with American Cloth	£2 5 0
No. 3.	Ditto ditto Cloth lined	£2 7 6
No. 12.	Single Perambulator, Cloth lined	£3 15 0
No. 55.	Ditto ditto ditto	£6 0 0
No. 60.	Double Perambulator, American Cloth lined...	£5 15 0
No. 61.	Ditto ditto Cloth lined	£6 10 0

BRISTOL PERAMBULATORS.

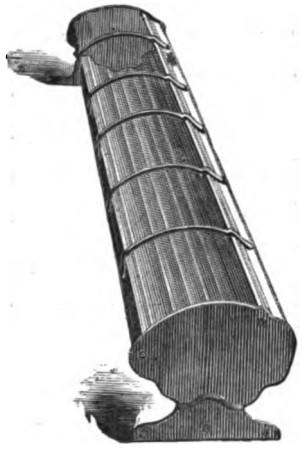


No. 1.	Single Perambulator	£ 1 10 0
No. 2.	Ditto ditto	£ 2 2 0
No. 3.	Ditto ditto	£ 2 12 6
No. 4.	Ditto ditto lined with Carriage Cloth	£ 3 13 6
No. 5.	Ditto ditto Circular Back, lined with Carriage Cloth ...	£ 3 10 0
No. 6.	Single Folding Perambulator	£ 4 4 0
No. 7.	Double Perambulator	£ 2 0 0
No. 8.	Ditto ditto	£ 2 15 0
No. 9.	Ditto ditto	£ 3 3 0
No. 10.	Ditto ditto with India Rubber Tire Wheels	£ 5 5 0
No. 11.	Light Invalid Chair	£10 10 0

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PAGE'S

PATENT GALVANIZED CORRUGATED PIG TROUGHS.



These Troughs combine all the requirements for good serviceable Troughs, being strong, light, durable, and water tight.

The bodies of the Troughs are of corrugated sheet iron, galvanized to prevent rust, and not liable to breakage, and they are provided with wrought iron Division Bars which also act as stays very efficiently.

The Corrugations effectually prevent any waste of food.

PRICES:—

3 feet long, 14 inches wide, with wrought Division Bars 12 inches apart	...	£0	10	6
4 feet long, 14 inches wide,	,,	,,	,,	,,	...	£0	14	0
5 feet long, 14 inches wide,	,,	,,	,,	,,	...	£0	16	0
6 feet long, 14 inches wide,	,,	,,	,,	,,	...	£0	18	0
7 feet long, 14 inches wide,	,,	,,	,,	,,	...	£1	0	0
8 feet long, 14 inches wide,	,,	,,	,,	,,	...	£1	2	0
10 feet long, 14 inches wide,	,,	,,	,,	,,	...	£1	4	0

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DOUBLE NORFOLK PIG TROUGHS.

STRONG PATTERN.

These cast iron Troughs allow a number of Pigs to feed at the same time in a small space without interfering with each other or wasting the food.

No. 1.	2 feet 4 inches long, 9 inches wide, for 12 Pigs	£0	8 3
No. 2.	3 feet 0 inches long, 10 inches wide, for 14 Pigs	£0	10 6
No. 4.	3 feet 6 inches long, 12 inches wide, for 14 Pigs	£0	14 3
No. 5.	2 feet 6 inches long, 18 inches wide, for 8 Pigs	£0	12 0
No. 6.	4 feet 0 inches long, 15 inches wide, for 10 Pigs	£0	17 6
No. 7.	4 feet 0 inches long, 15 inches wide, for 12 Pigs	£0	17 6
No. 8.	4 feet 0 inches long, 15 inches wide, for 14 Pigs	£0	17 6

DOUBLE NORFOLK PIG TROUGHS.

LIGHT PATTERN.

No. 102.	3 feet 0 inches long, 10 inches wide, for 14 Pigs	£0	8 3
No. 104.	3 feet 6 inches long, 12 inches wide, for 14 Pigs	£0	12 0
No. 106.	4 feet 0 inches long, 15 inches wide, for 10 Pigs	£0	14 6

SINGLE NORFOLK PIG TROUGHS.

STRONG PATTERN.

These Troughs are suitable for setting against a wall, but are in other respects similar to the Double Norfolk Troughs.

No. 11.	3 feet 0 inches long, 6 inches wide, for 7 Pigs	£0	8 3
No. 12.	2 feet 6 inches long, 8 inches wide, for 4 Pigs	£0	9 3
No. 13.	4 feet 0 inches long, 8 inches wide, for 7 Pigs	£0	13 0
No. 16.	2 feet 6 inches long, 11 inches wide, for 2 or 3 Pigs	£0	14 9
No. 16A.	3 feet 0 inches long, 11 inches wide, for 3 Pigs	£0	16 6
No. 16B.	4 feet 6 inches long, 11 inches wide, for 4 Pigs	£0	18 0
No. 17.	4 feet 0 inches long, 11 inches wide, for 4 Pigs	£0	19 9
No. 18.	4 feet 0 inches long, 11 inches wide, for 5 Pigs	£0	19 9
No. 19.	5 feet 0 inches long, 11 inches wide, for 5 or 6 Pigs	£1	4 6
No. 20.	6 feet 0 inches long, 11 inches wide, for 7 Pigs	£1	9 0

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SINGLE NORFOLK PIG TROUGHS.

LIGHT PATTERN.

These Troughs are similar to those described on the previous page but lighter.

No. 115.	2 feet 0 inches long, 11 inches wide, for 2 Pigs	£0 8 3
No. 116.	2 feet 6 inches long, 11 inches wide, for 2 Pigs	£0 9 0
No. 116A.	3 feet 0 inches long, 11 inches wide, for 3 Pigs	£0 11 0
No. 116B.	3 feet 6 inches long, 11 inches wide, for 3 Pigs	£0 13 0
No. 117.	4 feet 0 inches long, 11 inches wide, for 4 Pigs	£0 14 3
No. 119.	5 feet 0 inches long, 11 inches wide, for 5 Pigs	£0 18 0
No. 120.	6 feet 0 inches long, 11 inches wide, for 7 Pigs	£1 1 0

PIG TROUGHS,

With Circular Bottoms, Rounded Ends, and Internal Lip.

No. 330.	2 feet 0 inches long, 8 inches wide	£0 4 0
No. 331.	2 feet 6 inches long, 8 inches wide	£0 5 0
No. 332.	3 feet 0 inches long, 8 inches wide	£0 5 6
No. 333.	4 feet 0 inches long, 8 inches wide	£0 7 0
No. 334.	5 feet 0 inches long, 8 inches wide	£0 8 6
No. 335.	6 feet 0 inches long, 8 inches wide	£0 10 0
No. 332A.	3 feet 0 inches long, 10 inches wide	£0 6 6
No. 333A.	4 feet 0 inches long, 10 inches wide	£0 8 6
No. 334A.	5 feet 0 inches long, 10 inches wide	£0 10 6
No. 335A.	6 feet 0 inches long, 10 inches wide	£0 12 6
No. 332B.	3 feet 0 inches long, 12 inches wide	£0 8 6
No. 333B.	4 feet 0 inches long, 12 inches wide	£0 10 6
No. 334B.	5 feet 0 inches long, 12 inches wide	£0 12 6
No. 335B.	6 feet 0 inches long, 12 inches wide	£0 16 0
No. 336B.	7 feet 0 inches long, 12 inches wide	£0 19 6
No. 337B.	8 feet 0 inches long, 12 inches wide	£1 2 0
No. 338B.	9 feet 0 inches long, 12 inches wide	£1 6 0

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PIG TROUGHS,

With Circular Bottoms and Square Ends.

	s.	d.
No. 30. 2 feet 0 inches long, 10 inches wide	4	9
No. 31. 2 feet 6 inches long, 10 inches wide	5	9
No. 32. 3 feet 0 inches long, 10 inches wide	6	9
No. 34. 4 feet 0 inches long, 10 inches wide	9	0
No. 35. 5 feet 0 inches long, 10 inches wide	11	0
No. 36. 6 feet 0 inches long, 10 inches wide	13	3
No. 38. 3 feet 0 inches long, 12 inches wide	8	6
No. 39. 4 feet 0 inches long, 12 inches wide	11	0
No. 40. 5 feet 0 inches long, 12 inches wide	13	9
No. 41. 6 feet 0 inches long, 12 inches wide	16	3

WINDSOR PIG TROUGHS.

These Troughs are built into the wall of the stye, and the pigs can be fed on either side by moving the shutter which is suspended from the upper part of the frame.

These Troughs have been in use at the Model Farm, Windsor, for many years.

	£	s.	d.
3 feet long, 18 inches wide	£2	2	6
4 feet long, 18 inches wide	£2	12	6
5 feet long, 18 inches wide	£3	0	0
6 feet long, 18 inches wide	£3	10	0

	With extra Bar. 3ft. 3in. high.	With two extra Bars. 3ft. 9in. high.	With two extra Bars. 4ft. 3 in. high.
3 feet long, 18 inches wide	£2 9 0	£2 13 0	£2 15 6
4 feet long, 18 inches wide	£2 16 6	£3 0 0	£3 2 6
5 feet long, 18 inches wide	£3 5 0	£3 10 0	£3 12 6
6 feet long, 18 inches wide	£3 15 0	£4 0 0	£4 2 6

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CIRCULAR PIG TROUGHS,

WITH HOPPER.

BB No. 27.	2 feet diameter	Price	£0 11 0
No. 28.	2 feet 6 inches diameter	„	£0 16 6
No. 29.	3 feet diameter	„	£1 10 0

CROSSKILL'S IMPROVED PIG TROUGHS,

With Upright Ends and Moveable Shutter, to Feed on either Side of Wall.

2 feet 3 inches long	... ...	£2	15	0	3 feet 0 inches long	... ...	£3	0 0
3 feet 6 inches long	... ...	£3	15	0	4 feet 6 inches long	... ...	£4	10 0
5 feet 0 inches long	... ...	£5	0	0	5 feet 6 inches long	... ...	£5	15 0
6 feet 0 inches long	... ...	£6	5	0	6 feet 6 inches long	... ...	£6	15 0

ALBION DOUBLE NORFOLK PIG TROUGHS,

For Young Pigs.

		s.	d.
No. 2.	2 feet 6 inches long by 12 inches wide, for 10 pigs	7	6
No. 3.	3 feet 0 inches long by 12 inches wide, for 12 pigs	9	6
No. 4.	3 feet 6 inches long by 12 inches wide, for 14 pigs	12	0
No. 5.	4 feet 0 inches long by 12 inches wide, for 16 pigs	13	6

ALBION PIG TROUGHS.

With Circular Bottoms and Wrought Iron Cross Bars.

		s.	d.
No. 3.	2 feet 0 inches long by 8 inches wide...	3	6
No. 4.	2 feet 6 inches long by 8 inches wide...	4	6
No. 5.	3 feet 0 inches long by 8 inches wide...	5	3
No. 6.	4 feet 0 inches long by 8 inches wide...	7	0
No. 7.	5 feet 0 inches long by 8 inches wide...	9	0
No. 8.	6 feet 0 inches long by 8 inches wide...	11	0
No. 9.	2 feet 0 inches long by 10 inches wide...	4	6
No. 10.	2 feet 6 inches long by 10 inches wide...	5	9
No. 11.	3 feet 0 inches long by 10 inches wide...	6	6
No. 12.	4 feet 0 inches long by 10 inches wide...	9	0
No. 13.	5 feet 0 inches long by 10 inches wide...	11	0
No. 14.	6 feet 0 inches long by 10 inches wide...	14	0

ALBION CIRCULAR IRON PIG TROUGHS,

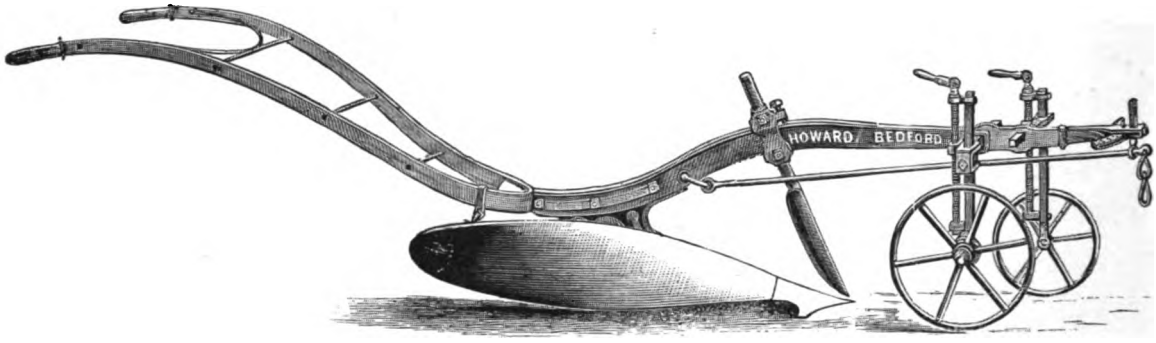
With Loose Revolving Top.

No. 30.	2 feet diameter, with 6 divisions	£0	12 0
No. 31.	2 feet 5 inches diameter, with 8 divisions	£0	18 6
No. 32.	2 feet 9 inches diameter, with 11 divisions	£1	1 0

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HOWARD'S "CHAMPION" PLOUGHS,

With Screw Depth Regulators.



The above engraving illustrates one of Howard's "Champion" Ploughs, with Patent Screw Regulators to the wheel fastenings, which permit of the alteration of the depth of the Ploughing without stopping the horses. As the old plan of binding screws is retained, the ploughman can avail himself of either method.

The Patent Screw Regulators can be supplied with any of Howard's Ploughs.

The following are various sizes of Howard's Ploughs:—

D. Dwarf Plough, suitable for a small horse or pony. Adapted for stirring loose soil or for shallow ploughing where the draught is light.

Price £2 10 0

Steel Breast 3/6 extra. Steel Side Cap 2/- extra. Weight 1¼ cwt.

DD. A very light but strong plough, suitable for one horse, for Cottage Farmers' and Gardeners' use.

Price, with one Wheel... ... ... £3 0 0

Price, with two Wheels £3 10 0

Skim Coulter 5/- extra. Steel Breast 5/- extra. Steel Side Cap 2/- extra. Weight 1½ cwt.

If with Draught Pole, for Oxen 10/- extra.

EB. 1-Horse Plough, adapted for shallow ploughing.

Price, with one Wheel £3 2 6

Price, with two Wheels £3 12 6

Skim Coulter 5/- extra. Steel Breast 5/- extra. Steel Side Cap 2/- extra. Weight 1¾ cwt.

Patent Screw Regulators to any of the above Ploughs 5/- extra.

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HOWARD'S "CHAMPION" PLOUGHS

(CONTINUED).

SB. A light Pair-horse Plough. Price, with two Wheels £4 7 6

Skim Coulter 5/- extra. Steel Breast 5/- extra. Steel Side Cap 2/- extra. Weight 2 cwt.

LB. A light Pair-horse Plough, fitted with Lever Neck for altering the pitch of the Share. Price, with two Wheels £4 15 0

Skim Coulter 5/- extra. Steel Breast 5/- extra. Steel Side Cap 2/- extra. Weight 2¼ cwt.

B. A Pair-horse General Purpose Plough, fitted with Lever Neck. Price, with two Wheels £5 2 6

Skim Coulter 5/- extra. Steel Breast 5/- extra. Steel Side Cap 2/- extra. Weight 2½ cwt.

BB. A strong General Purpose Plough, fitted with Lever Neck. Price, with two Wheels £5 7 6

Skim Coulter 5/- extra. Steel Breast 5/- extra. Steel Side Cap 2/- extra. Weight 2¾ cwt.

BW. A Pair-horse Plough, with wooden Handles and Beam, the latter plated edgewise with iron, giving great strength to the Beam without material increase in weight.

BW, without Wheels	£3	2	6	BBW, without Wheels	£3	7	6
BW, with one Wheel	£3	10	0	BBW, with one Wheel	£3	15	0
BW, with two Wheels	£4	0	0	BBW, with two Wheels... ...	£4	5	0
Weight of BW 2 cwt.				Weight of BBW 2¼ cwt.			

CB. Colonial Ploughs, made entirely of wrought iron, malleable iron, and steel, to pack in small compass. The general design is the same as the B and BB Ploughs, but with fewer parts.

CB, with wrought Frame, two Wheels, and steel Breast, weight 2¼ cwt. £5 15 0

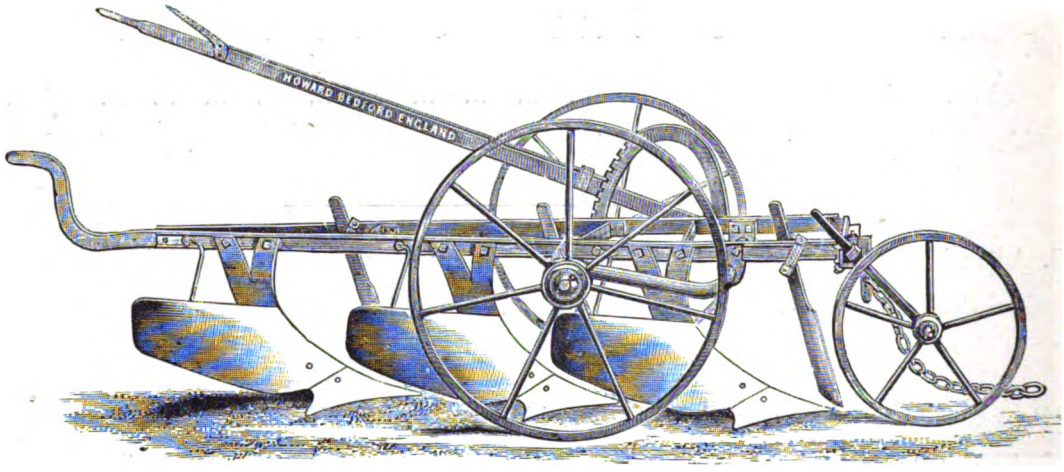
CBB, with wrought Frame, two Wheels, and steel Breast, weight 2½ cwt. £6 0 0

Patent Screw Regulators 5/- extra.

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HOWARD'S

THREE FURROW PLOUGH.



The introduction of Steam Ploughs has led Farmers, especially of light land, to desire that their Ploughs, drawn by animals, should take a greater width. The above Triple Plough has been brought out to meet this requirement. By its use greater economy, as well as expedition in ploughing, is effected than with the Double Furrow Plough, into which it may at once be converted by the removal of the hinder body, and this is sometimes desirable on ground where the draught is heavy. The depth of work can be regulated by the Lever as the Plough proceeds, and at the ends the Plough is lifted by the same Lever clear off the ground.

Price, with Steel Breasts, and Steel Side Caps £12 15 0

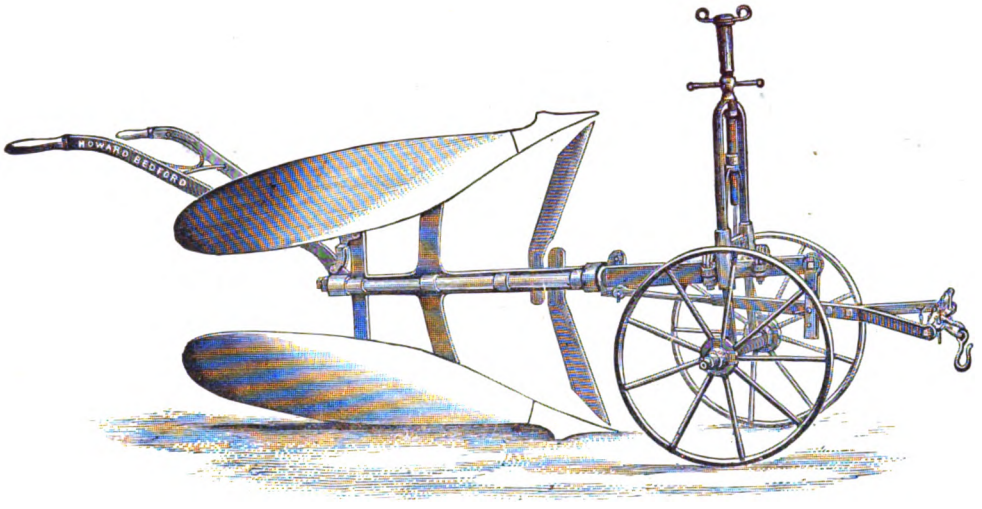
Price, with Steel Breasts, and Steel Side Caps, but without Coulters £12 0 0

Weight 5½ cwt.

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HOWARD'S

TURNOVER OR BRABANT PLOUGHS.



This form of Plough is in general use in many parts of France and Belgium. The Breasts, Shares, and Coulters are in duplicate and securely attached to the Plough Beam, thus rendering the implement more durable than the ordinary Turnwrest Plough.

These Ploughs are easily turned at the land's end, and are well adapted for Irrigation Farms and localities where ploughing is required all one way.

Price, with steel Breasts as illustrated £9 0 0

Weight 3¼ cwt.

HOWARD'S

SOUTH RUSSIAN PLOUGHS.

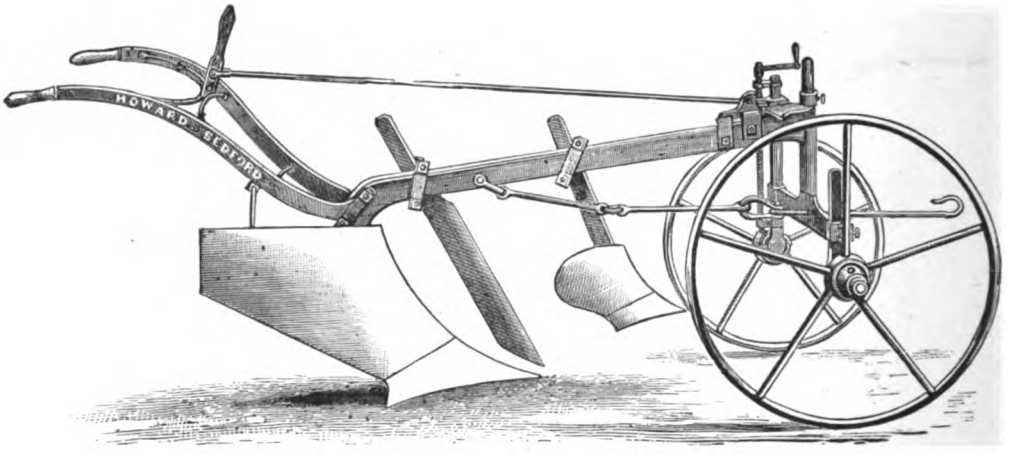
These Ploughs are intended for deep rough work, and specially designed for South Russia. They are very strongly made throughout of wrought iron and steel, and are calculated to stand a great amount of rough usage.

AE Plough, with steel Breast, weight 3 cwt. £6 2 6

WR Plough, with steel Breast, weight 3¼ cwt. £7 7 0

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HOWARD'S "UNIVERSAL" PLOUGH.



The "Universal" Plough shown above is somewhat novel in appearance, and possesses several advantages, especially for deep work. The draught is remarkably light, and the peculiar form of the Breast leaves a broken surface similar to digging.

The arrangement of the Wheel Carriage is also new, and combines the advantage of Wheels screwed to the Beam with the good points of the Gallows Carriage.

J, with wrought Share and Skim Coulter, weight 2¼ cwt. £6 0 0

JJ, with wrought Share and Skim Coulter, weight 2½ cwt. £6 10 0

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HOWARD'S

NEW PLOUGH FOR DEEP WORK.



This Plough has the Breast and Share of the same type as in the "Universal" Plough previously described.

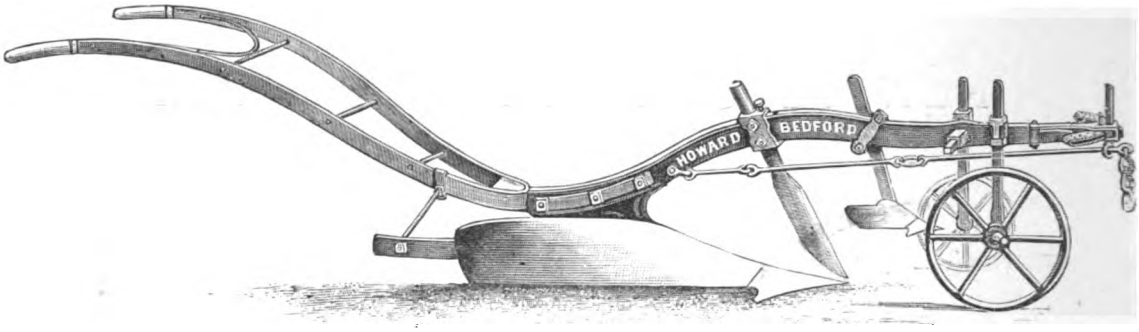
The Wheels are attached to the Beam by a single cross-bar, and can be readily adapted to various widths and depths.

This Plough is particularly suitable for Market Gardeners and others desiring a deep pulverized furrow slice.

J, No. 5, with Skim Coulter, weight 2 cwt.	£4	15	0
J, No. 5, with Skim Coulter and wrought Share, weight 2 cwt.	£5	0	0
JJ, No. 5, with Skim Coulter, weight 2¼ cwt.	£5	0	0
JJ, No. 5, with Skim Coulter and wrought Share, weight 2¼ cwt.	£5	5	0

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HOWARD'S KENT PLOUGHS.



This Plough is constructed to turn the furrows completely over, or upside down, in the same way as by the old Kentish Turnwrest Plough.

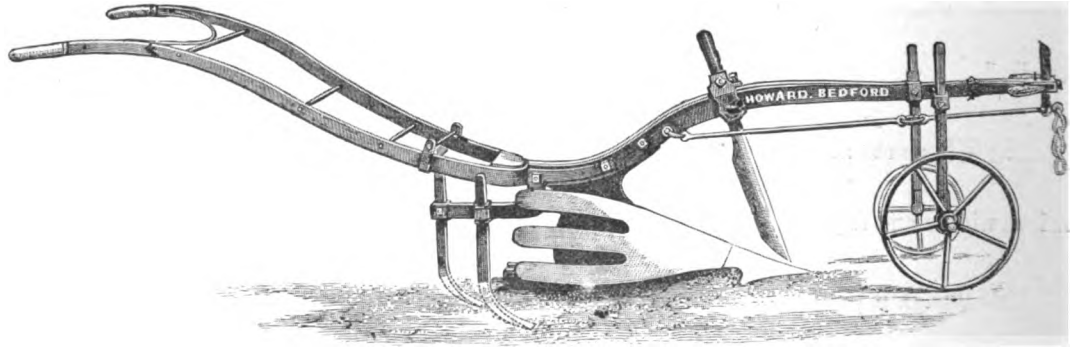
The draught is considerably less than in the old form of Plough, and in many cases two horses may be dispensed with.

Price complete, as above £7 5 0

Steel Breast 5/- extra. Steel Side Cap 3/6 extra. Weight 3¼ cwt.

HOWARD'S

COMBINED SUBSOIL AND PULVERISING PLOUGHS.



The above are in every respect like the "Champion" Ploughs, but fitted with Digging Breast and Subsoil Tines, which break or pulverise the soil to a depth of 6 to 9 inches below the furrow.

Market Gardeners find these Ploughs very efficient implements for deep tillage, and as they are turned into an ordinary Plough by simply changing the Breasts and removing the Tines they are much in demand.

B, weight 2½ cwt.... ... ... £5 17 6

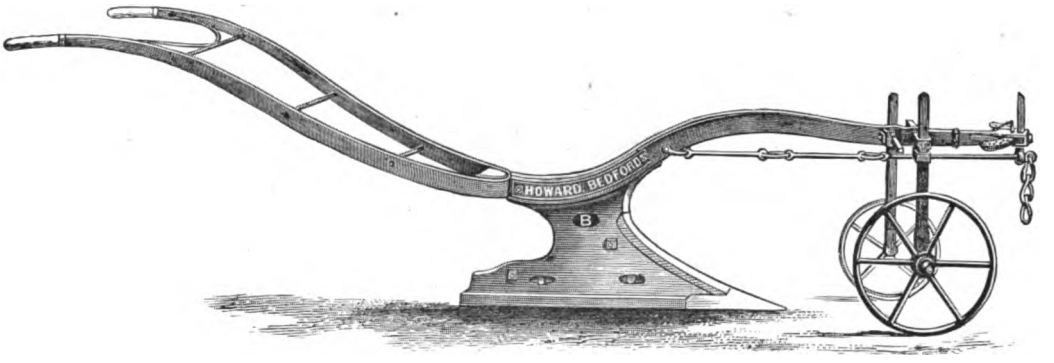
BB, weight 2¾ cwt.... .. .. £6 5 0

Price of separate set of Subsoilers for any of Howard's Ploughs 17/6.

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HOWARD'S

SINGLE SUBSOIL PLOUGH.



A strong simple implement, and similar to the BB Plough previously described, but fitted with a Subsoil Frame instead of an ordinary Plough body.

The draught is light, and the Plough is easily turned at the land's end.

Price £4 5 0

Weight 2 cwt.

HOWARD'S

DOUBLE SUBSOIL PLOUGH.

This is a very strong and efficient implement for breaking up the close hard soil below the furrow, often rendered impervious by the trampling of horses.

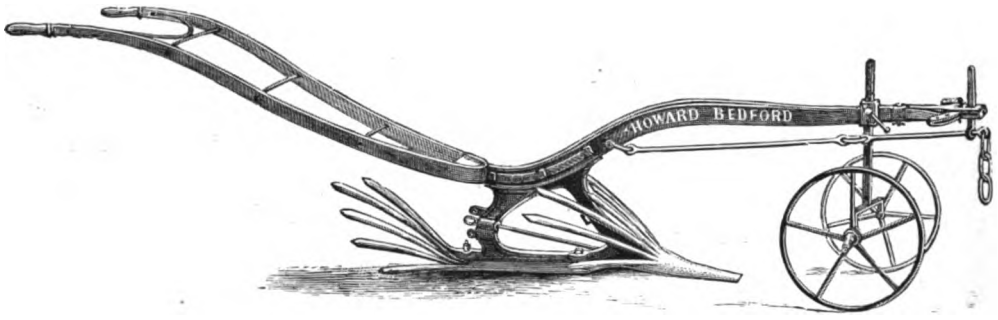
It moves the whole of the ground with as little draught as many single tined implements, and is very useful for breaking up headlands after the Steam Ploughing Engine.

Price... ... ... £7 0 0

Weight 2½ cwt.

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HOWARD'S POTATO PLOUGH.



A pair of horses with the above Plough can raise three or four acres of Potatoes per day. The roots are raised with fewer bruises or scratches and with less loss than by hand digging.

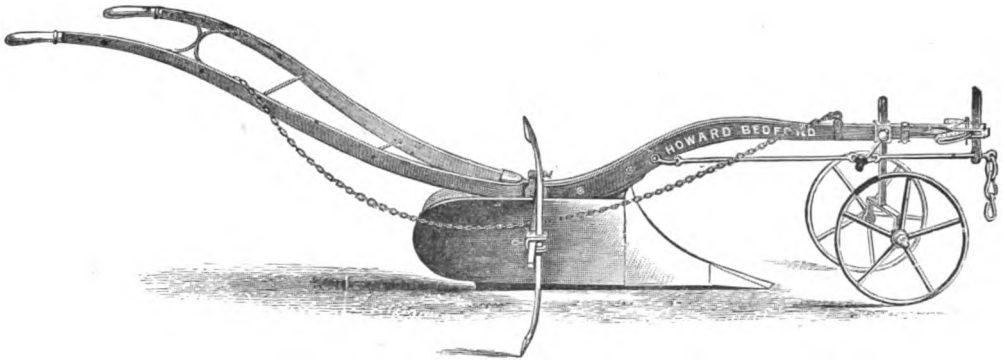
For earthing up Potatoes it will be found a better implement than the ordinary Ridging Plough, as it throws the earth more lightly on the Potatoes.

By removing the Raisers and putting on the ordinary Breasts and Share it is at once changed into a Ridging Plough.

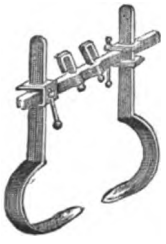
	D.	DD.	SB.	B.	BB.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Price, with one Wheel and front Raiser only	3 5 0	3 7 6	3 10 0	3 15 0	4 7 6
Price, with two Wheels and front Raiser only	3 10 0	3 12 6	3 15 0	4 0 0	4 12 6
Price, with one Wheel and pair of Raisers	4 0 0	4 5 0	4 7 6	4 12 6	5 5 0
Price, with two Wheels and pair of Raisers, as illustrated	4 5 0	4 10 0	4 12 6	4 17 6	5 12 6
Weight	1¼ cwt.	1½ cwt.	1¾ cwt.	2 cwt.	2¼ cwt.

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HOWARD'S RIDGING PLOUGHS.



These Ploughs are intended for moulding up or forming ridges for Turnips, Beet-root, or Potatoes. The Breasts are of improved design and fitted to the Plough in such a manner that they can be readily expanded or contracted independently of each other.



By simply removing the Breasts and attaching the Hoes shown in the annexed engraving these implements can be used as Horse Hoes.

The size marked B is recommended as the most generally useful implement.

	D Iron Breasts.	D Steel Breasts.	DD Iron Breasts.	DD Steel Breasts.	SB Iron Breasts.	SB Steel Breasts.
Price, without Wheels ...	£2 15 0	£3 0 0	£3 2 6	£3 10 0	£3 7 6	£3 17 6
Price, with one Wheel ...	£3 0 0	£3 5 0	£3 7 6	£3 15 0	£3 12 6	£4 2 6
Price, with two Wheels ...	£3 5 0	£3 10 0	£3 12 6	£4 0 0	£3 17 6	£4 7 6
	Weight 1¼ cwt.		Weight 1½ cwt.		Weight 1⅞ cwt.	

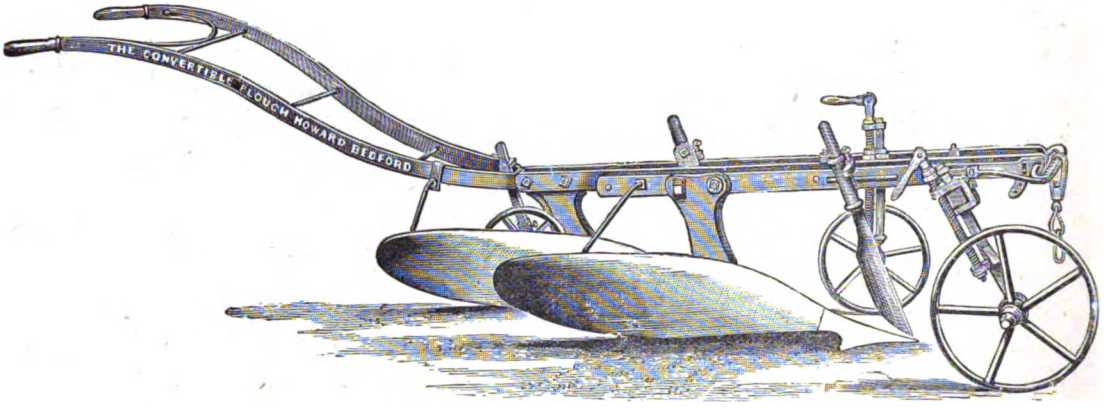
	B Iron Breasts.	B Steel Breasts.	BB Iron Breasts.	BB Steel Breasts.
Price, without Wheels	£3 12 6	£4 2 6	£4 5 0	£4 15 0
Price, with one Wheel	£3 17 6	£4 7 6	£4 10 0	£5 0 0
Price, with two Wheels	£4 2 6	£4 12 6	£5 0 0	£5 10 0
	Weight 2 cwt.		Weight 2¼ cwt.	

Marker as above, to regulate width of ridges, 8/6 extra. Set of Hoes as above, 11/- extra.

Front Potato Raisers 20/-. each. Hind Potato Raisers, 20/- each

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HOWARD'S
CONVERTIBLE DOUBLE FURROW PLOUGH.



This implement is a light, strong, and efficient Double Plough, convertible in a few minutes into an equally efficient Single Plough.

When the second Plough is removed there are no loose parts to lie about and get lost,

The Beams are of steel, tapered from end to end, both in width and thickness, thereby giving lightness and rigidity.

The depth of ploughing can be altered by the Patent Screw Regulators, as shown, without stopping the horses.

Price, with malleable Frames and steel Breasts £9 15 0

Weight 3¼ cwt.

HOWARD'S
WOOD AND IRON CONVERTIBLE PLOUGH.

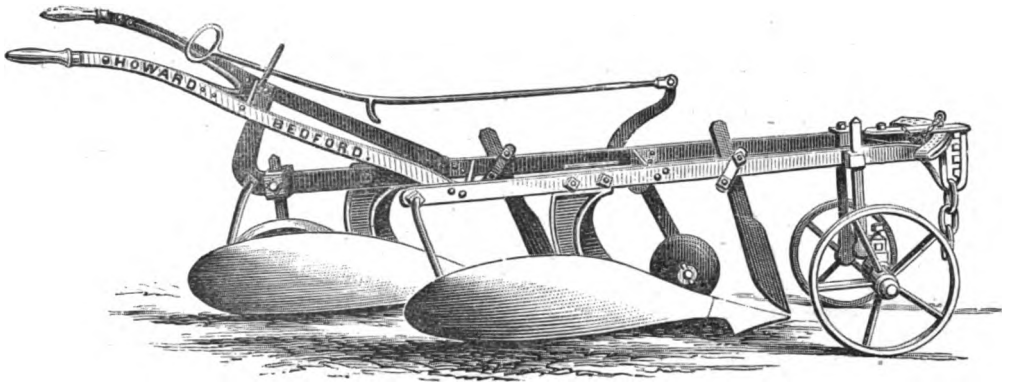
This Plough has the same advantages as the one above described, and can be used either as a Single or Double Furrow Plough.

The Handles are of wood, and the Beam is a combination of wood and iron; the wood having a plate of iron on the top throughout its length, giving great strength to the Beam without materially increasing the weight.

Price, with steel Breasts, weight 3¼ cwt. £9 0 0

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HOWARD'S
DOUBLE FURROW PLOUGHS.



In these Ploughs the Beams are firmly braced together so that there is no springing or tremor, and consequently no loss of power on hard ground.

The lifting of the Plough out of work at land's end is done entirely by the horses, the ploughman having merely to release a Lever connected with a Bowl Wheel, which raises the shares out of the ground while the horses are moving forward, and the Plough is turned very easily.

The Patent Expanding Beam, for altering the width of furrow, is held firmly at both ends, thus securing rigidity and durability.

The Patent Steerage is so arranged that one Lever locks or steers both the land and furrow wheels, and the Plough is easily steered even on steep hill sides.

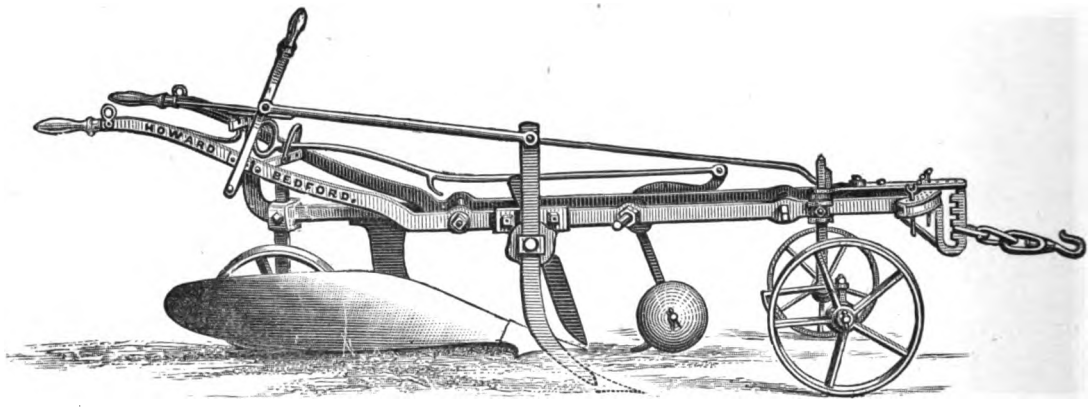
FB Plough, with Leverage, but without Steerage or Expanding Beam, average weight 2½ cwt.	£ 7 0 0
FB Plough, without Leverage, Steerage, or Expanding Beam, average weight 2¼ cwt.	£ 6 5 0
FB Plough, with Leverage and Expanding Beam, but without Steerage, average weight 2½ cwt.	£ 7 10 0
FB Plough, with Leverage, Steerage, and Expanding Beam, average weight 2¾ cwt.	£ 9 0 0
OB Strong General Purpose Plough, with Leverage and Expanding Beam only average weight 3½ cwt...	£ 8 10 0
OB Strong General Purpose Plough, with Leverage, Steerage, and Expanding Beam, average weight 3¾ cwt.	£10 0 0
OBU Strong General Purpose Plough, with Leverage, Steerage, Expanding Beam, and wrought iron Bodies, average weight 3½ cwt.	£11 0 0

Pair of Skim Coulters, 10/- extra. Pair of Steel Breasts, 10/- extra.

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HOWARD'S

COMBINED DOUBLE PLOUGH AND SUBSOILER.



This implement is intended for use either as a Double Plough, turning over two furrows at a time, or to plough a single furrow and subsoil another. As the Subsoiler precedes the Plough body the treading of the furrow by the horses after subsoiling is avoided, and the *pan* of the last furrow is broken up just before the new furrow is turned over it.

Price as above, average weight 4½ cwt. £12 10 0

Price, with two Plough Bodies and Subsoil Tine, as above, average weight 5¼ cwt.... ... ... £14 0 0

Steel Breasts, 10/- extra. Malleable Frames, 15/- extra.

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HOWARD'S

DYNAMOMETER, OR DRAUGHT GUAGE.



This is a simple instrument for testing the draught of Ploughs or other implements; one end is hooked to the implement, the other to the whippletree; as the horses draw, the spring is collapsed, and the draught is indicated on the dial.

A pair of ordinary farm horses, walking at the rate of 2½ miles an hour, will work an implement, the resistance of which is about 3 cwt.

Price, with strong oak case, complete £3 5 0

A special Self-Recording Dynamometer has been designed by J. & F. Howard for the purpose of ascertaining the draught of Ploughs, Mowers, Reapers, and other Implements or Machines. The Self-Registering Apparatus gives the exact draught, and also indicates the oscillations which have taken place. This instrument is of special value to Agricultural Societies requiring to ascertain with great accuracy the draught of various Implements or Machines.

Price £30 0 0

PLOUGH SLEDGES.

Plough Sledges will be found very useful for removing Ploughs from one part of the farm to another.

The wear of Plough Slades or Soles, by sliding on the roads, is avoided, as well as the liability to strain.

The breakages which often take place in loading or unloading are also obviated.

Price of Plough Sledge, with Wheels £0 12 6

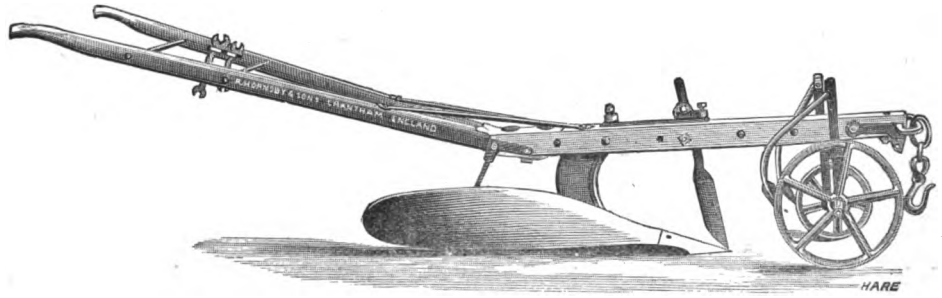
Price of Plough Sledge, without Wheels £0 8 6

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HORNSBY'S

SINGLE AND DOUBLE FURROW PLOUGHS,

With Wood Handles and Combined Wood and Iron Beam.

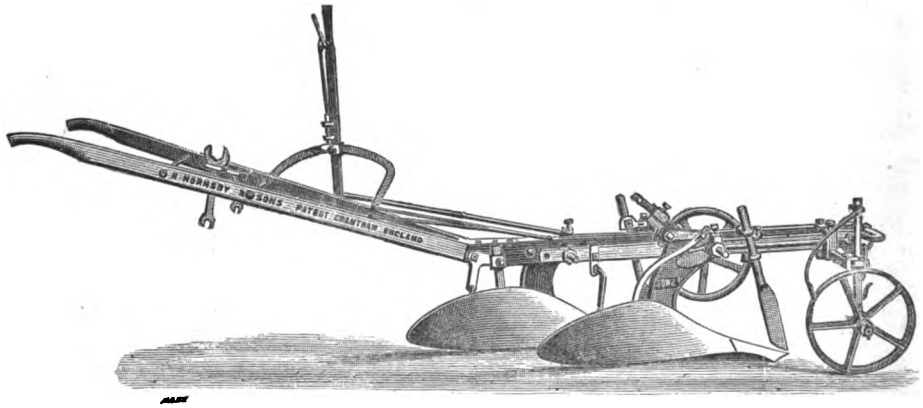


SW SINGLE FURROW PLOUGH.

The wood Beam of these Ploughs is stiffened by iron plates bolted on each side, forming a perfect truss, with the maximum of strength and rigidity and the minimum of weight.

SW Single Furrow Swing Plough (without Wheels), with cast Breast £3 15 0
SW Single Furrow Plough, with two Wheels and cast Breast £4 7 6

Steel Breast, 5/- extra. Skim Coulter, 5/- extra.



SDW DOUBLE FURROW PLOUGH, WITH LIFT.

In the Double Furrow Ploughs the adjustments for regulating the width of furrow are simple and effective, ensuring the rigidity of the Plough bodies during work and also rapid and easy alteration.

A carrying Wheel is fitted to the hind body, which facilitates turning at the headlands.

The Plough can be used either as a Double Furrow, or as a Single Furrow by removing the front body.

Prices of Hornsby's Combined Wood and Iron Ploughs.

New Patent SDW Convertible Single and Double Furrow Plough, with three Wheels and cast iron Breasts	£8	5	0
New Patent RDW Convertible Single and Double Furrow Plough, with Three Wheels and cast iron Breasts, suited for High Cut or Lancashire work and the R series of Shares	£8	5	0
A new light Double Furrow Plough, with wood Handles and combined wood and iron Beams, SLW, very light in draught, suitable for heath land, with cast iron Breasts	£8	0	0
Extra, Skim Coulters, each	£0	5	0
Extra, for Steel instead of cast iron Breasts, each Breast...	£0	5	0
Extra, if fitted with Patent Lifting Apparatus for use on the Double Furrow Plough, when fitted with long Breasts	£2	0	0

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HORNSBY'S

PATENT DOUBLE FURROW PLOUGHS.

In these Ploughs the points of contact of the Breasts and Shares are struck from one radius which allows of the ready adjustment of the Breast to any width of furrow, and secures at the same time a perfect contact of Breast and Share in any position.

The Plough Wheels have patent removable Bosses and Axles of chilled iron, and the Rims present rounded surfaces both to the bottom and side of furrow, which run very clean in work.

The Plough can be turned in its own length by a Lever which lowers an Arm or Skid behind the front Plough Body and causes the Plough to revolve as on a centre, turning round on the Land Wheel.

Straightness and uniformity of the furrows are ensured by means of a Patent Parallel Straightening Bridle, which enables the ploughman to steer very accurately.

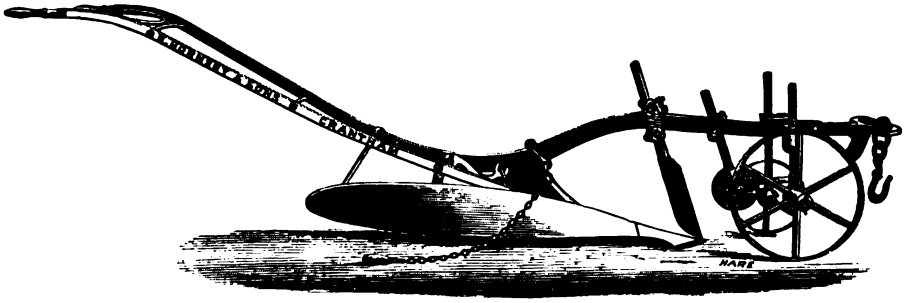
The width of furrow can be adjusted to a width of from 7 to 12 inches by sliding the hind Plough Body backwards or forwards along the frame, which is of triangular shape.

The depth of furrow can be regulated from 2 to 9 inches while the Plough is at work.

Mark	NB.	NN.	N.	NL.
Price, including steel Breasts	£8 0 0	£9 0 0	£10 0 0	£11 0 0
Patent Parallel Straightening Bridle	— ———	£0 10 0	No ex. charge.	No ex. charge.
Two Skim Coulters	£0 10 0	£0 10 0	£ 0 10 0	£ 0 10 0
Two Drag Chains	£0 4 0	£0 4 0	£ 0 4 0	£ 0 4 0
Two Skeith Coulters instead of Skim Coulters	£1 1 0	£1 1 0	£ 1 1 0	£ 1 1 0
Average weight	cwt. qr. 3 1	cwt. qr. 3 2	cwt. qrs. 3 3	cwt. qrs. 4 1
Adapted for working to a depth of	inches. 6	inches. 6 to 7	inches. 7 to 9	inches. 10 or more

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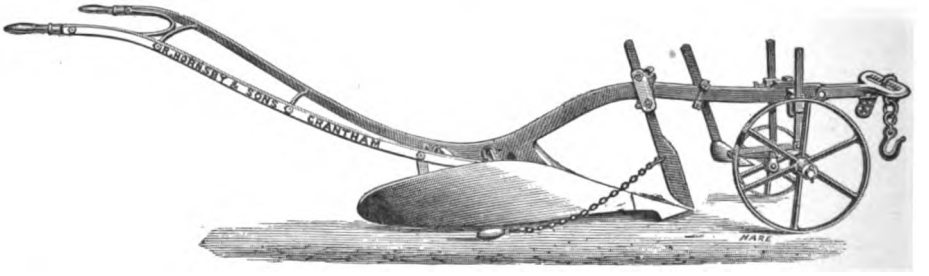
HORNSBY'S
WROUGHT IRON SINGLE FURROW PLOUGHS.



This Plough is useful for either light or heavy land. The Frame is of wrought iron and has a Patent Lever Neck Movement for altering the pitch of the Share; well adapted for Prize Ploughing when fitted with long Breast. Suitable for two to four horses to plough from 9 to 12 inches deep.

Price, with steel Breast £5 15 0

Skim Coulter, 5/- extra. Drag Chain, 2/- extra.



These Ploughs are made with wrought iron Frames and Lever Neck (except the RL, F, R, and FF). They are adapted for forming high crested, rectangular, or broken furrows according to the description of Share and Breast employed.

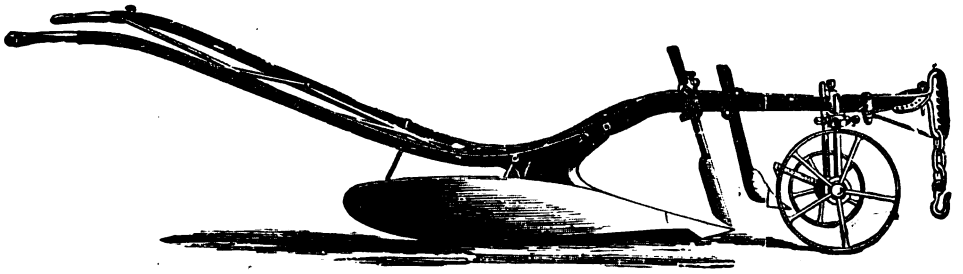
Distinctive Mark ...	RL	F or R	FF	FG or RA	LH or RB	H or RC	HH	RD	HHH or WP
Strength or Size...	Pony Plough.	One Light Horse.	Two Light Horses.	Two Light Horses.	2 or 3 Horses.	2 to 4 Horses.	2 to 6 Horses for heavy Work.	2 to 6 Horses for heavy Work.	From 4 to 8 Horses.
Depth intended to Plough	3 to 6 in.	3 to 6 in.	3 to 7 in.	3 to 7 in.	3 to 8 in.	3 to 9 in.	4 to 10 in.	4 to 11 in.	8 to 16 in.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Price as a Swing ...	...	3 0 0	3 15 0	4 0 0	4 7 6	4 15 0	5 0 0	5 12 6	...
,, with 1 Wheel...	2 10 0	3 2 6	3 17 6	4 2 6	4 10 0	4 17 6	5 2 6	5 17 6	7 5 0
,, with 2 Wheels	3 0 0	3 10 0	4 5 0	4 10 0	4 17 6	5 5 6	5 10 0	6 2 6	7 12 6
Fitted with Steel Breast, extra ...	0 4 0	0 4 6	0 5 0	0 5 0	0 5 0	0 5 0	0 6 0	0 6 0	0 7 6
Skim Coulter, extra	0 5 0	0 5 0	0 5 0	0 5 0	0 5 0	0 5 0	0 5 0	0 5 0	0 6 0
Drag Chain, extra ...	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0	0 2 0

RS Plough, for deep flat work on strong ground, same price as RD. RO Plough, with extra deep Breast for Fen Land, same price as RD.

Bridle Ploughs (without Draught Rod), with two Wheels and steel Breast, are always sent unless ordered otherwise.

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RANSOMES, SIMS, & HEAD'S PLOUGHS.



In these Ploughs the Beam is made to embrace the Frame, and the Handles or Stilts are braced diagonally to secure strength and rigidity.

The Wheels have a long Axle, with a Collar forged on and turned perfectly true; the Nave is also bored out true and has one end closed, and the other covered with a plate and leather collar to exclude dirt; upon the same principle as carriage wheels with Patent Axles. No draught chain is used. Different Breasts can be used to suit any soil or kind of work.

	Average Weight.	Two Wheels.	One Wheel.	Swing.
RND, for light land, working 4 to 6 inches deep, with 2 horses	2 cwt.	£4 10 0	£4 0 0	£4 0 0
RNDH, for mixed soil, working 4 to 6 inches deep, with 2 horses	2¼ cwt.	£4 17 6	£4 7 6	£4 7 6
RNE, for general purposes on light mixed soils, working 5 to 8 inches deep, with 2 or 3 horses	2½ cwt.	£5 5 0	£4 15 0	£4 15 0
RNF, for general purposes on mixed and heavy soils, working 6 to 9 inches deep, with 2 to 4 horses...	2¾ cwt.	£5 10 0	£5 0 0	£5 0 0
RNG, for deep ploughing on heavy land, working 8 to 12 inches deep, with 4 or 6 horses	4½ cwt.	£10 10 0	£10 0 0	———

EXTRAS.

	Skim Coulter.	Steel Breast.	Drag Chain & Pall.
	s. d.	s. d.	s. d.
For RND, RNDH, RNE, and RNF Ploughs	5 0	... 5 0	... 2 0
For RNG Plough	6 0	... 15 0	... 2 0

All these Ploughs, except the RNG, may be fitted with bodies for Subsoiling, Ridging, or Potato Raising.

Subsoiling Body, price 17/6. Ridging or Potato Raising Bodies, 37/6 each.

These Ploughs are constructed for two horses to work abreast, unless specially ordered otherwise.

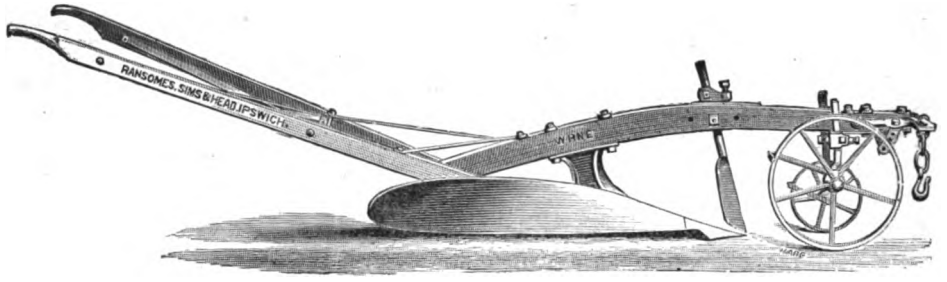
Friction Wheel instead of Slade, 5/- extra for each Plough, except the RNG.

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RANSOMES, SIMS, & HEAD'S PLOUGHS.

IMPROVED WOOD BEAM PLOUGH,

W.R.N.E.



This Plough is both strong and simple in its construction, and is fitted with wooden Beam and Handles instead of iron ; adapted for light and medium soils and easily worked by two horses.

The Coulter and Wheel Irons are attached in a simple and efficient manner, permitting of easy adjustment.

The Plough can be used with either one or two Wheels, or as a Swing Plough, in the latter case the Beam is made shorter.

WRNE Plough, with two Wheels...	£4 2 0
WRNE Plough, with one Wheel	£3 14 0
WRNE Plough, without Wheels	£3 4 0

Skim Coulter, 5/- extra. Steel Breast, 5/- extra. Drag Chain and Ball, 2/- extra.

The Breasts and Shares for this Plough are marked RNF.

Long Breasts for match ploughing or short Breasts for general purpose ploughing can be fitted as desired.

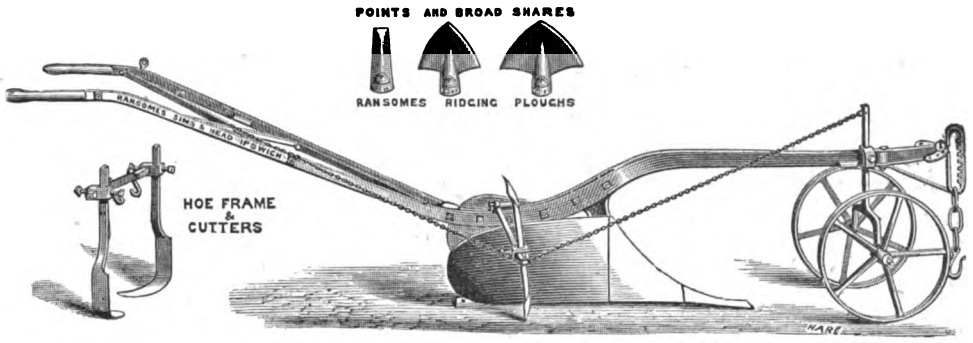
Ploughs fitted with Digger Breasts are the same price as those fitted with ordinary Breasts.

Patent Rotary Harrow and Attachments... ... ... extra	£1 15 0
Patent Rotating Fork ... ... extra	£1 15 0

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RANSOMES, SIMS, & HEAD'S

MOULDING OR RIDGING PLOUGHS.



These Ploughs are intended for ridging or moulding up Potatoes, Turnips, Beet-root, or other Plants, and for opening Water Furrows.

By removing the Breasts the Plough may be used for subsoiling, or ordinary bodies for regular ploughing may be attached.

MOULDING OR RIDGING PLOUGHS.

	Weight. cwt. qrs. lbs.	Cast Breasts. Two Wheels.	Cast Breasts. One Wheel.	Steel Breasts. Two Wheels.	Steel Breasts. One Wheel.	Hoe Frame. Marker.	Hoe Frame. and Cutter.
RHRL ...	1 1 0	£3 7 6	£3 2 6	£3 12 6	£3 7 6	8/-	12/-
RHR ...	1 2 14	£3 17 6	£3 12 6	£4 5 0	£4 0 0	8/-	12/-
RNRL ...	2 0 0	£4 7 6	£4 2 6	£4 17 6	£4 12 6	10/-	15/-
RNR ...	2 1 0	£4 17 6	£4 7 6	£5 7 6	£4 17 6	10/-	15/-

The above Ploughs can also be fitted with Shares and Prongs for raising Potatoes, at the rate of from three to four acres per day.

POTATO RAISING PLOUGHS.

RHRL, two Wheels	£3 2 6
RHR, two Wheels	£3 12 6
RNRL, two Wheels	£4 2 6
RNR, two Wheels	£4 12 6

Hind Prongs, 10/- extra. Potato Share, Prongs and Cutter, RHRL and RHR 15/-, RNRL and RNR, 18/-.

SKELTON'S

PATENT TURNWREST PLOUGH.

This Plough turns the furrows all one way and is useful for hill-side ploughing, sewage farms, or for preparing land for Mowing and Reaping Machines.

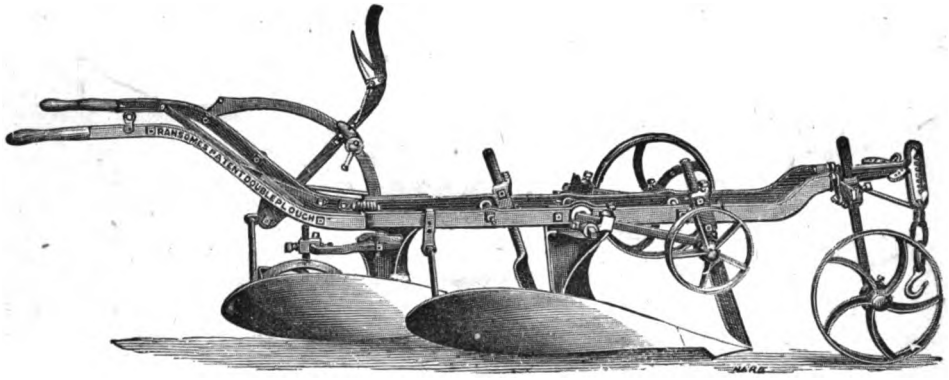
	Weight.	Two Wheels.	One Wheel.	Swing.
SPT...	2¾ cwt.	£8 0 0	£7 0 0	£6 10 0
SPTH	3 cwt.	£9 0 0	£8 0 0	£7 10 0

Skim Coulter, 10/- Steel instead of Cast Breasts, 10/- per pair.

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RANSOMES, SIMS & HEAD'S

DOUBLE FURROW PLOUGH.



These Double Furrow Ploughs are made in two sizes, RNDD6 adapted for general purposes, and RNCD adapted for light and mixed soils.

The Plough is lifted out of work at the land's end by a Lever on the left side of the Plough Handles, acting upon two lifting wheels in the centre of the Beam, which raise the Plough above the ground and upon which it can be turned very easily in either direction.

The depth of ploughing can be regulated by means of an adjustable clip, which can be set in any position on the circular arc.

The width of furrows can also be adjusted to plough from seven to twelve inches wide.

	Weight.	Price.
RNDD6, with Adjustable Beams and Patent Double Lifting Wheels...	4½ cwt.	£10 10 0
RNCD, ditto ditto ditto	4 cwt.	£ 9 5 0

Skim Coulters, 10/- per pair. Steel Breasts, 10/- per pair.

The above Ploughs can be supplied with a Patent Subsoiler instead of the front body at the same price.

The Subsoiler works at the bottom of the furrow in the place of the front body, the hind Plough turning a complete furrow over the subsoiled portion, which is therefore never trodden by the horses.

RLCD, with Adjustable Beams and Patent Bowl Wheel, for light land, to plough 7½ to 10 inches wide, and from 3 to 8 inches deep, weight about 3 cwt. £8 0 0

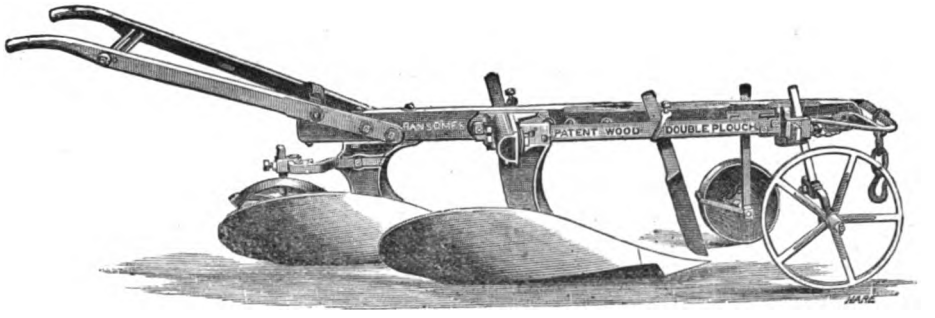
Skim Coulters, 10/- per pair. Steel Breasts, 10/- per pair.

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RANSOMES, SIMS, & HEAD'S

PATENT DOUBLE FURROW PLOUGHS,

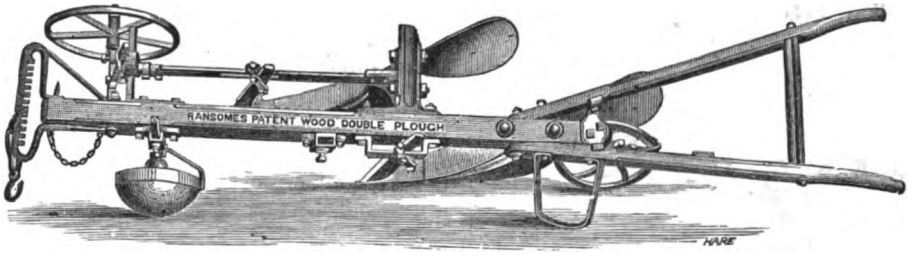
With Wood Beam and Handles, W.O.L.D and W.O.E.D.



These Patent Wood Beam Double Furrow Ploughs are of light and simple construction; can be altered to take various widths of furrow and are easily turned at the headland.

The Main Beam (to which the hind body is attached) and the Handles are of wood; the Bar which carries the front body and coulters is of iron, and can be regulated in width by sliding it either inwards or outwards on a strong bracket secured to the Main Beam.

The Land Wheel is of a hemispherical or bowl shape, which admits of the Plough being thrown on to its side for turning at the headlands, as shown in the engraving below.



	Weight.	Price.
WOLD, with Adjustable Beams and Patent Bowl Wheel	...2 cwt. 2 qrs. 14 lbs.	£7 0 0
WOED, ditto ditto ditto	3 cwt. 2 qrs. 20 lbs.	£8 10 0

Skim Coulters, 10/- per pair. Steel Breasts, 10/- per pair.

A pair of good horses will work the WOLD Plough on light soils.

Shares for WOLD Ploughs are marked RL, and for the WOED are marked RNF.

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RANSOMES, SIMS, & HEAD'S

PATENT THREE FURROW PLOUGH.

This Plough will take three furrows, each nine inches wide, on light land, and will work to a depth of six inches with three or four horses.

Lifting Apparatus is supplied upon the same principle as that used with the Double Furrow Ploughs described on page 416.

	Weight.	
RLM, Treble Furrow Plough, with steel Breasts...	5 cwt.	£12 0 0

Coulters, 15/- extra.

RANSOMES'

PATENT FOUR FURROW SEED COVERER AND PARER.

This Plough is intended for paring stubble fields or for covering seed, which has been sown broadcast, with soil. The small Shares and Breasts are set six inches apart, covering a width of two feet in all, and are suitable for working from 2 to 4 inches deep.

Patent Double Lifting Wheels are fitted to the implement, with Lever for adjusting the depth and lifting the Plough out of the ground for turning.

SEED, 4 Seed Cover, with 4 Cast Breasts, for 2 or 3 horses £6 15 0

Weight 2 cwt. 3 qrs.

RANSOMES' SCOTCH PLOUGHS.

These Ploughs are of wrought iron, fitted with wrought Frames and Shares, and cast iron Side Cap. They are light enough for two horses and strong enough for six; suitable for ploughing from 6 to 9 inches deep.

	Average Weight.	Two Wheels.	One Wheel.	Swing.
SCW	2 cwt.	£7 0 0	£6 10 0	£6 5 0
TC	2½ cwt.	£7 10 0	£7 0 0	£6 15 0

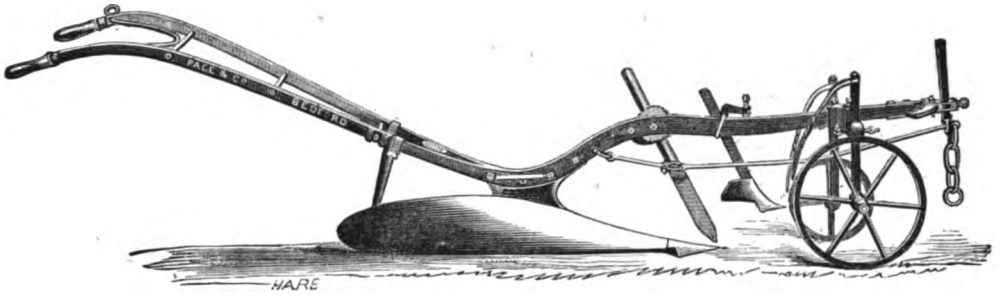
Steel Breast, 5/- extra.

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E. PAGE & Co.'s

PATENT WROUGHT IRON "ECLIPSE" SINGLE FURROW PLOUGH,

H.L.W.



The above engraving illustrates one of the "Eclipse" Ploughs, fitted with long Match Breast, for turning regular and unbroken furrows.

It is suitable for ploughing on heavy or light land, and can be worked by a stout pair of horses while it is strong enough for four.

The Beam and Handles are of wrought iron and the Breast of Steel. The Frame is of cast iron, fitted with wrought Lever Neck for altering the pitch of the Share.

The Coulter Fastening has a very simple adjustment by which the Coulter can be set at any angle on any portion of the Plough Beam.

HLW, Price, with two Wheels and steel Breast £5 5 0

Skim Coulter, 5/- extra. Drag Chain and Ball, 1/6 extra. Average Weight, 2¾ cwt.

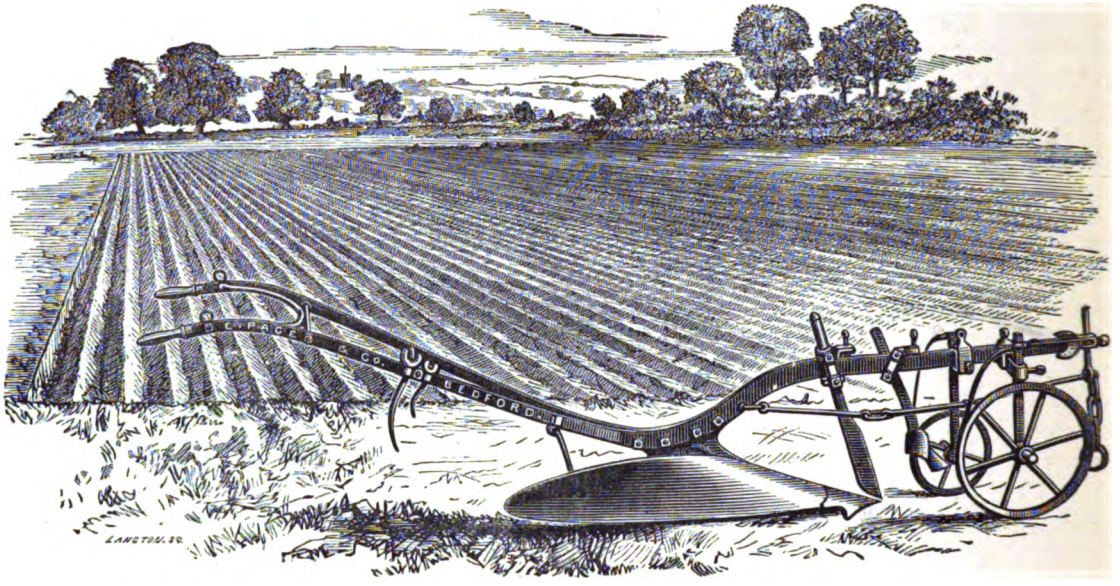
Subsoil, Ridging, or Potato Raising Bodies can be fitted to the above, in lieu of the ordinary body, by which means the Plough is perfectly applicable to the special purpose indicated.

Subsoil Body, 17/6. Ridging Body, 37/6. Potato Raising Body, 37/6.

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E. PAGE & Co.'s

PATENT SINGLE FURROW PLOUGHS.



The following Ploughs are similar in general design and appearance, but differ in size and weight :—

HL, with two Wheels and steel Breast, suitable for two to four horses £5 0 0
Skim Coulter, 5/- extra. Drag Chain and Ball, 1/6 extra.
Average Weight, 2½ cwt.

MP, with two Wheels and steel Breast, for two, three, or four horses £4 15 0
Skim Coulter, 5/- extra. Drag Chain and Ball, 1/6 extra.
Average Weight, 2¼ cwt.

WB, with two Wheels and steel Breast, for two or three horses £4 10 0
Skim Coulter 5/- extra. Drag Chain and Ball, 1/6 extra.
Average Weight, 2 cwt. 0 qrs. 14 lbs.

A2, with two Wheels and steel Breast, for a pair of horses £4 5 0
Skim Coulter, 5/- extra. Drag Chain and Ball, 1/6 extra.
Average Weight, 2 cwt.

A2½, with two Wheels and Steel Breast, for a pair of light horses £3 15 0
Skim Coulter, 5/- extra. Drag Chain and Ball, 1/6 extra.
Average Weight, 1¾ cwt.

Ridging Bodies for the above Ploughs ... ... extra £1 17 6
Potato Raising Bodies ditto ... ... extra £1 17 6

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E. PAGE & Co.'s

SINGLE FURROW PLOUGHS

(CONTINUED).

A2B Plough, with one Wheel and cast Breast £3 0 0
A2B Plough, with two Wheels and Cast Breast £3 7 6
Suitable for one horse on light soil.
Skim Coulter, 5/- extra. Steel Breast, 5/- extra. Average Weight, 1¼ cwt.

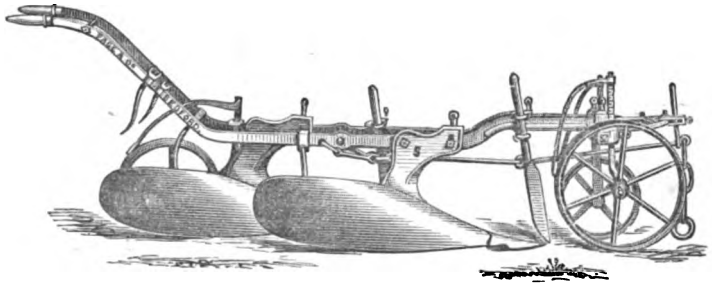
A3 Plough, with one Wheel and cast Breast £2 10 0
A3 Plough, with two Wheels and Cast Breast £2 17 6
Suitable for a small horse on light land. Steel Breast, 5/- extra. Average Weight, 1¼ cwt.

A4 Plough, with one Wheel and steel Breast £2 10 0
A4 Plough, with two Wheels and steel Breast £2 17 6
Suitable for a small horse. Average Weight, 1 cwt. 0 qrs. 14 lbs.

L Plough, with one Wheel and steel Breast... ... ... £2 5 0
Suitable for a pony, for use in market gardens. Average Weight, 1 cwt.

E. PAGE & Co.'s

DOUBLE FURROW PLOUGHS.



These Double Ploughs are made as light as possible, and combine the greatest strength with lightness of draught for horses and easy management. The Beams can be adjusted for any width of furrow.

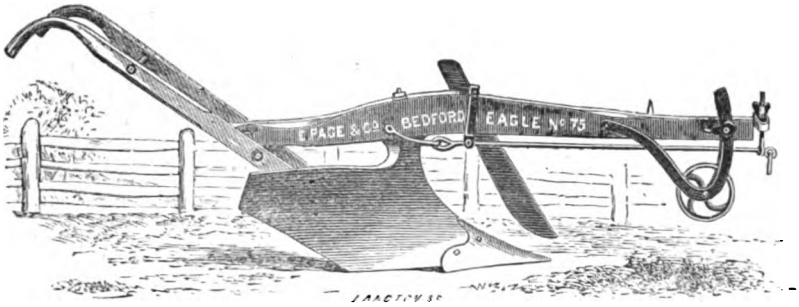
Double Furrow Plough, marked S, with expanding Beam and steel Breasts, average weight 3½ cwt. £7 10 0

Skim Coulters, extra, 10/- per pair. Hind Wheel, 7/6 extra.

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E. PAGE & Co.'s

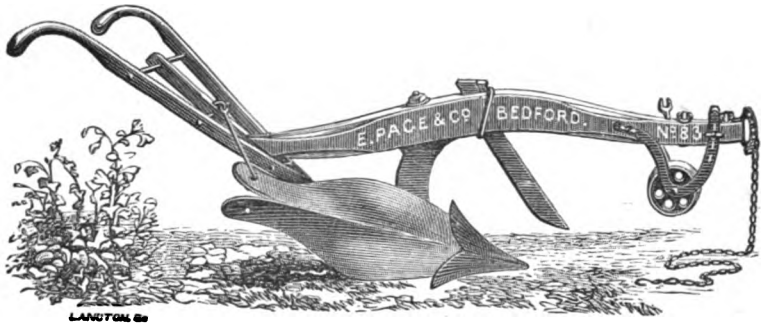
AMERICAN PLOUGHS.



This Plough is highly recommended for use in the preparation of new lands for Indian Corn, Wheat, &c. The annual production and sale have exceeded by far that of any other make.

Eagle No. 75, price... ... ... £2 10 0

AMERICAN TURNWREST PLOUGH.



This Plough is a Turnwrest Plough for hillside or other ploughing. The Mould-board can be easily and instantaneously changed from one side of the beam to the other. It is strongly recommended for use in Brazil, Spain, the West Indies, and the Colonies.

No. 83, price £3 5 0

Steel Breast, 5/- extra.

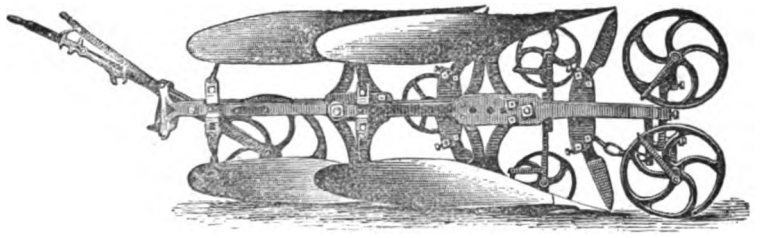
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DAVEY, SLEEP, & Co.'s

TURNWREST DOUBLE FURROW PLOUGHS.

The "Climax," Turnwrest Double Furrow Plough.

B.R.



This Turnwrest Double Furrow Plough is made of wrought iron and steel, with the exception of the Wheels, which are of cast iron. It is adapted for either hillside or level land; the Beam, Handles, and Bodies take to pieces, and can be packed in small compass for export.

The adjustment of the Share is effected by an eccentric bolt connecting the Body and Beam.

No. 1, with Expanding Beams, Adjustable Bodies, and Patent Eccentric Share Leverage

Price £15 0 0

No. 2, General Purpose Plough, with Expanding Beam

Price £14 0 0

Skim Coulters, 5/- extra each. Skeith Coulters, 15/- extra each. Average Weight, 4½ cwt.

DIRECTIONS FOR WORKING.

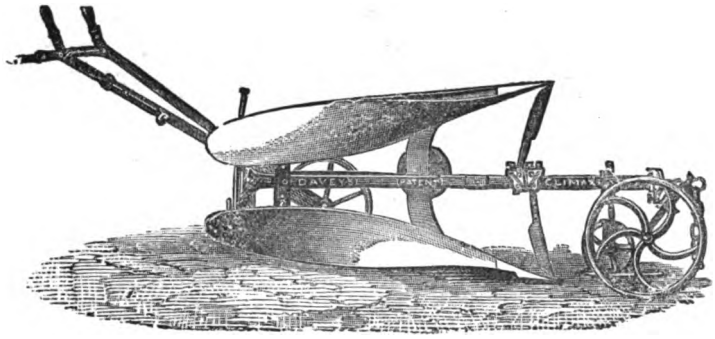
On reaching the headlands, and immediately before the horses are stopped, the Plough must be thrown on its side on the Turn-table or Disc. The hind Wheel and Handles which are held rigid by a catch should be unhooked, the Handles reversed, and again hooked with the catch. Doing this will require scarcely a minute of time, and the ploughman can now give all his attention to turning the horses, the Plough (bearing on the Disc) turning round after the horses. As the draught chain tightens, the Plough rises to its vertical or working position, the ploughman merely putting one hand to steady it. The front or furrow wheel, being self-acting, will always fall into its proper place. By expanding or contracting the Beams, any required width of furrow can be obtained, and the two land wheels accurately regulate the depth. The above remarks are equally applicable for working the Single Furrow "Climax" on next page.

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DAVEY, SLEEP, & Co.'s

SINGLE FURROW TURNWREST PLOUGH.

The "Climax" B.R.



This Single Furrow Turnwrest Plough is similar to the one described on the previous page, and well adapted for hillside ploughing. The Shares, Coulters, and Breasts are rigidly attached to the Beam, and not liable to be misplaced in transit or use.

Price of "Climax" Single Furrow Turnwrest Plough... ... ... £8 12 6

Skim Coulters, 5/- extra each. Skeith Coulters, 15/- extra each.

By using Turnwrest Ploughs the field can be ploughed from one side to the other without requiring any setting out or "feering," and the furrows are all laid one way, leaving the land quite level and without ridges.

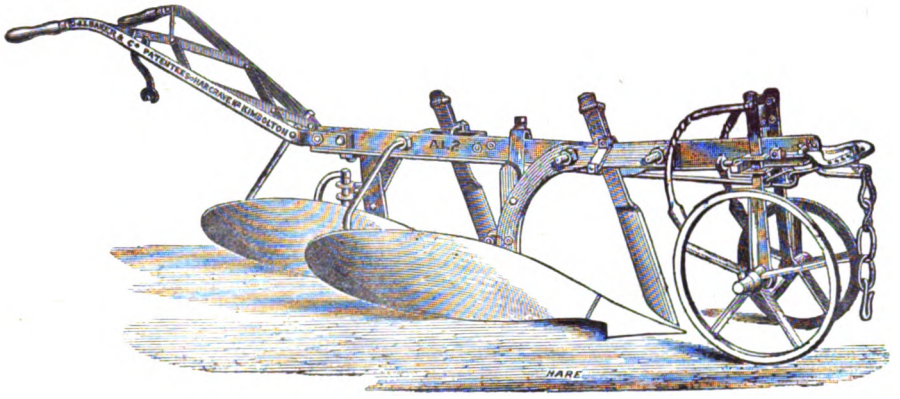
They are well adapted for use on Irrigation Farms, and facilitate the working of Mowing and Reaping Machines.

All kinds of ploughing can be done with the Turnwrest Plough with more despatch than with the Single Plough, as there is no loss of time in travelling empty over the headlands.

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BAKER'S

STEEL DOUBLE FURROW PLOUGH.



This Double Furrow Plough has a single Beam of steel, and the Bodies, Handles, Breasts Coulters, Wheel Standards, and Stays are also of steel; the result being extreme lightness and strength, the weight being only 2½ cwt.

The width of furrow is easily adjusted, and the fastenings are simple and regulated with facility.

PRICES:—

Double Furrow Plough (A12 Steel), "The Surprise"		£9	10 0
Ditto (A12), wrought iron Bodies and steel Breasts		£8	10 0
Ditto (A13 Steel), "The Surprise," fitted with extra long steel Breasts		£9	15 0

EXTRA IF FITTED—

With Skim Coulters	per pair	£0	12 6
„ Disc ditto	„	£0	15 0
„ Colonial Disc ditto	„	£1	5 0
„ Steel Digging Breasts	„	£1	0 0
„ Wheels, having renewable Naves	„	£0	5 0
Shares, ordinary sizes	per doz.	£0	9 0
Paring Shares, steel Blades	... each	£0	5 0
Wrought Shares, ordinary sizes	... „	£0	9 6
Cast steel Shares, ditto	... „	£0	5 0
Drag Chain and Weight	... „	£0	2 0
Skim Coulter Shares	per doz.	£0	4 6

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HOWARD'S

FOUR FURROW STEAM PLOUGH.

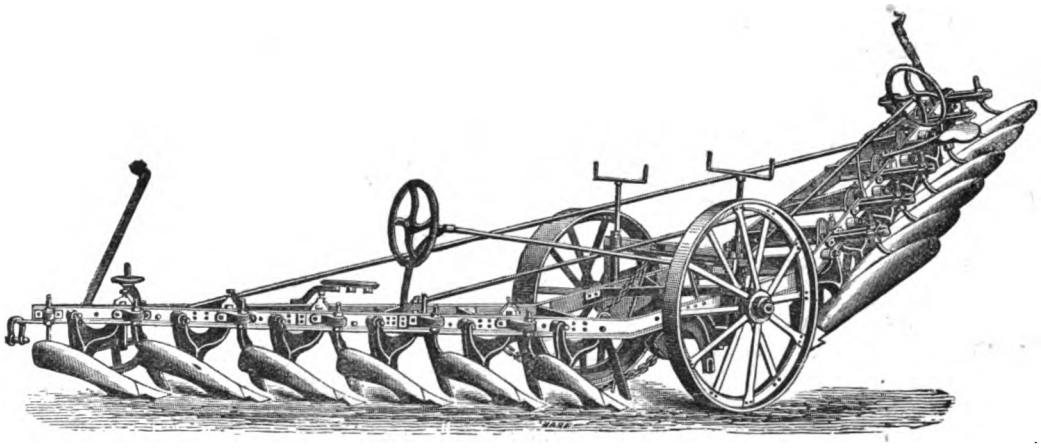
This Implement is carried by two strong wrought iron Wheels of large diameter, and is readily adjusted to plough different depths. The Beams which carry the Plough Bodies are of flanged steel, and every part is very strong. The Steerage and methods of altering the depth of the Wheels are very simple. By substituting suitable Breasts and Shares, this Plough may be used for scarifying or digging.

4-Furrow Steam Plough	£70 0 0
4-Furrow Steam Plough for deep work	£80 0 0
3-Furrow Steam Plough	£60 0 0
3-Furrow Steam Plough for deep work	£70 0 0
6-Furrow Steam Plough	£95 0 0
2-Furrow Steam Plough for extra deep work	£90 0 0
Steam Plough for one Furrow for extra deep work, with Subsoil Tine	£90 0 0

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FOWLER'S

PATENT BALANCE STEAM PLOUGHS.



These Ploughs have a rigid iron Frame, so arranged that the shape of the Mould-boards or Breasts can be varied to suit any requirements.

The widths of the furrows can be readily altered by means of wedges, which throw the Ploughs at different angles to the Frame.

This arrangement does away entirely with bolts and screws, while the Ploughs are firmly and securely held in the desired position.

By using Digging Breasts instead of the ordinary Mould-boards, the land may be tilled in a manner quite equal to spade husbandry.

The Shares and Mould-boards being attached to the outside of the Beam, all danger of choking in very foul land is obviated.

Ordinary English or Kent Ploughs.	Cast Iron Skifes.	Malleable Iron or Steel Skifes.
3-Furrow (light)	— — —	£ 65 0 0
3-Furrow	£ 65 0 0	£ 75 0 0
4-Furrow	£ 79 0 0	£ 92 0 0
5-Furrow	£ 87 0 0	£102 0 0
6-Furrow	£ 95 0 0	£114 0 0
8-Furrow	£119 0 0	£144 0 0
Deep Kent Plough.		
3-Furrow	— — —	£ 92 0 0
4-Furrow	— — —	£110 0 0
5-Furrow	— — —	£126 0 0

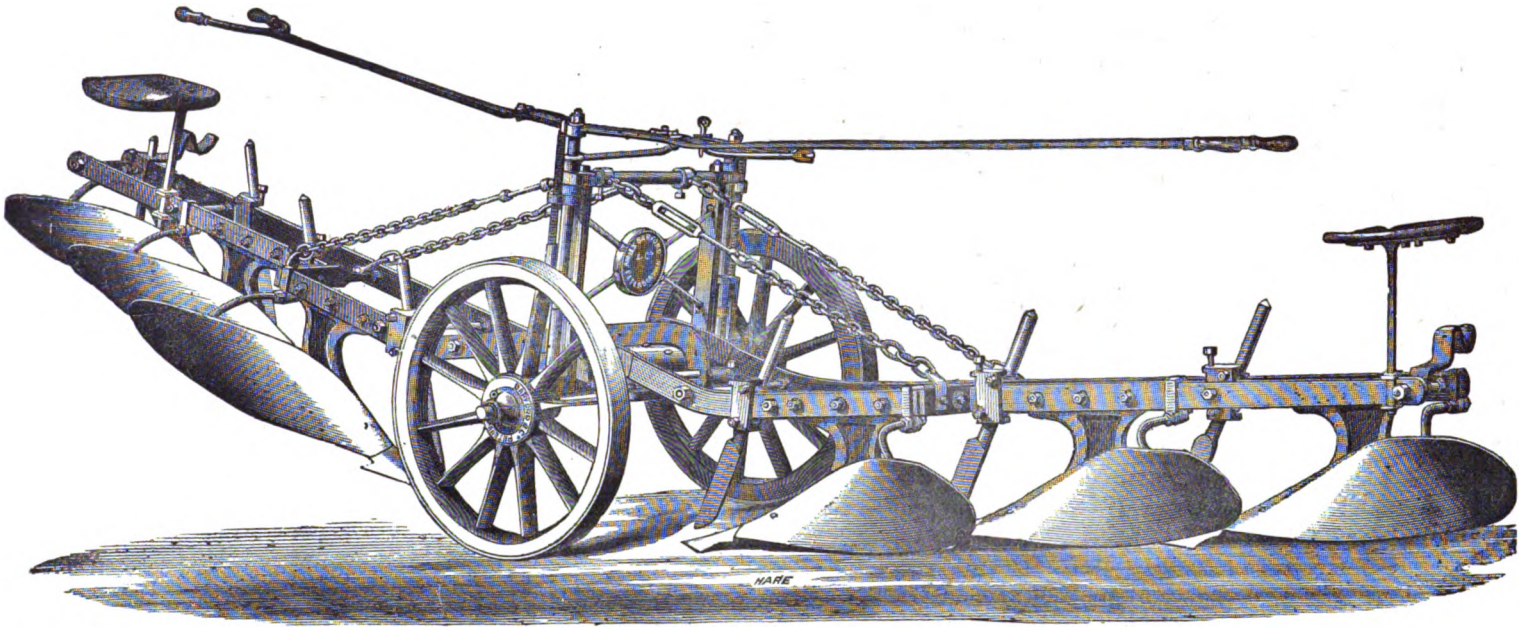
Ordinary German Plough (with Improved Mould-boards).	
4-Furrow	£ 92 0 0
5-Furrow	£103 0 0
6-Furrow	£117 0 0

Deep German Plough.	
2-Furrow	£ 77 0 0
3-Furrow	£102 0 0
4-Furrow	£122 0 0
5-Furrow	£135 0 0

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BARFORD & PERKINS'

PATENT COMBINED STEAM PLOUGH AND DIGGER.



These Ploughs are very strong yet light, simple, and easily managed, and can be advantageously worked as Ploughs and Diggers.

3-Furrow Combined Steam Plough and Digger ...	...	...	...	...	...	...	...	...	...	...	...	...	...	£60	0	0
4-Furrow	ditto	ditto	...	...	...	...	...	...	...	...	...	...	...	...	£80	0	0

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DECAUVILLE'S PATENTS.

In the Decauville System of Portable Railways the rails are in one piece with the sleepers and flitch plates, so that the line can be put down anywhere, or be removed and relaid very rapidly and with very little labour.

The rails are made in lengths of 4, 8, or 16 feet, and rivetted to flat iron sleepers from 3 to 4 feet apart; the Gauges generally adopted being 16 or 20 inches, which are the most rigid and the most portable, one man being able to carry a 16 feet length of the double rails (weight about 1 cwt.) by placing himself between them and grasping one in each hand.

Both the rails and sleepers are made to take their proper bearing on the ground for their whole length, so that the line does not sink, even in wet ground.

The Rails are jointed without either pins or bolts, the lengths being simply laid end to end and secured by a Fish Plate rivetted to one end of each Rail and pushed under the head of the other, which forms a joint so rigid that the entire line can be lifted bodily without destroying its continuity.

Four men can take up 400 yards of this portable railway and relay it 30 yards further on in an hour and a quarter.

LINE No. 1.

10 lb. Steel Rails.	Portable. 16 in.		20 in.		24 in.		With Wing Rails or Tramway Rails. 16 in.		20 in.		24 in.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Straight Line ... ... per yard run	3	6	3	9	4	0	6	9	7	3	7	9
Curved Line, radius 15, 20, 25, and 30 feet ... ... per yard run	5	3	5	6	5	9	10	0	10	6	11	0
Portable Level Crossing, for Vehicles, strengthened with oak, in sections 4 feet long ... ... per yard run	10	0	11	0	12	0	—	—	—	—	—	—
Crossing for two Lines... ... ... each	£2	0	£2	6	£2	12	£3	16	£4	8	£5	0
Ditto, for three Lines ... ... each	£3	10	£4	2	£4	14	£5	4	£6	0	£6	12
Switches for Crossings.	s.	d.	s.	d.	s.	d.						
No. 1, short length of Rail, to be moved by the foot	5	0	5	3	5	6	—	—	—	—	—	—
No. 2, fixed cast iron Points for hand shunting	15	0	16	0	18	0	—	—	—	—	—	—
No. 3, fixed cast iron Casing, with moveable Points, for shunting by horses or mules	22	6	23	6	24	6	—	—	—	—	—	—

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DECAUVILLE'S PATENTS

(CONTINUED.)

LINE No. 1.

10 lb. Steel Rails.	Gauge, 16 in.			Portable. 20 in.			24 in.		
	£	s.	d.	£	s.	d.	£	s.	d.
Portable Inclined Plane for throwing off branch lines ...	0	14	0	0	15	0	0	16	0
Portable Turntable ... ... each	3	8	0	4	4	0	5	0	0
Turntable, with concave cast iron Casing ... ... ,,	5	8	0	5	16	0	—	—	
Ditto, large size ... ... ,,	—	—		11	4	0	13	0	0
Shifting Plate for Cow Sheds ... ... ,,	1	8	0	1	16	0	2	4	0
Pass-everywhere, for the Junction of two Male or Female Ends of Rails ... ... ,,	0	2	6	0	2	9	0	3	0
Portable Weighing Machine for 1 ton, fitted with removable Rails ... ... ,,	10	0	0	10	0	0	10	0	0
Sheet iron Casing for setting the Weighing Machine in the ground ... ... ,,	3	8	0	3	8	0	3	8	0

LINE No. 2,

14 lb. Steel Rails.	16 in.			Portable. 20 in.			24 in.		
	£	s.	d.	£	s.	d.	£	s.	d.
Straight Line ... ... per yard run	0	4	9	0	5	0	0	5	3
Curved Lines, radius 20, 25, and 30 feet ,,	0	6	6	0	6	9	0	7	0
Portable Level Crossing, strengthened with oak (in lengths of 4 feet) .. .. per yard run	0	11	3	0	12	3	0	13	3
Crossing for Two Lines, radius 20, 25, and 30 feet, each	2	2	0	2	10	0	2	18	0
Ditto Three Lines ... ... ,,	3	18	0	4	6	0	4	14	0
Moveable Points (No. 3) for above Crossings, for shunting by horses ... ... each	1	5	0	1	7	0	1	9	0
Ditto, for shunting by locomotives ... ... each	—	—		2	10	0	2	16	6
Portable Inclined Plane, for throwing off branch lines ,,	0	14	0	0	15	0	0	16	6
Pass-everywhere, for the junction of two Male or Female Ends of Rails ... ... each	0	4	0	0	4	6	0	5	0
Portable Turntable	3	12	0	4	8	0	5	4	0
Fixed Turntable, with Iron Casing ... ... } Weighing Machine, fitted with Rails ... ... }	Prices on application.								

The Portable Inclined Plane is about six feet long and is used for running wagons up it off the main line on to a branch by means of two tapering Rails placed on the main line. A branch line can thus be laid and connected with the main line at any point without disturbing the latter in the least.

The Shifting Plate is intended for Mines, Paper Mills, Cow-sheds, and other places where the railway is always damp and Turntables would be objectionable. It has no raised projections and is very easy to clean.

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DECAUVILLE'S PATENTS

(CONTINUED).

WAGONS. CLASS I.

Type No. 1, Light Carrier Wagons, for use with Hand Baskets.

These Wagons are constructed of iron alone, or of iron and wood combined, the weight being sufficient to cause them to run steadily on the line. The Wheels are of chilled cast iron running loose on fixed axles, to which two lengths of H iron are rivetted to form the frame. The Platform is formed of two pieces of plate ⅛ inch thick, connected at each end by a piece of angle iron. The bottom of the Wagon is left open to allow the dirt to escape freely from the materials in transit, such as Beet or other roots, so that the Hand Basket may ride securely on the Wagon.

	16 in. Gauge.	20 in. Gauge.
No. 1, Light Carrier Wagon, to carry 4½ cwt., 2 feet long ...	£1 12 0	£1 14 0
No. 2, Light Platform Wagon, to carry 4½ cwt., 3 feet 3 inches long, for use with Corner Uprights and Crossbars, and with Hand Baskets	£2 0 0	£2 4 0

The Hand Baskets are made of light flat and round bars and weigh about 40 lbs. each with the handles. They will hold from two to three cwt. of Beet-roots.

Fittings for use with Wagons No. 1 & No. 2.

	16 in. Gauge.	20 in. Gauge.
To carry Roots, &c., open-worked Hand Basket of wood and iron, fitted with Handles	£0 15 0	£0 15 0
To carry Lime, Earth, &c., sheet-iron Hand Basket fitted with Handles	£1 0 0	£1 0 0
Drag Chain, 5 yards long	£0 11 0	£0 11 0

For use with Wagons No. 2.

Corner Uprights and Crossbar, with holes for fitting on sides	£1 4 0 .. £1 4 0

Brakes for any of the above Wagons, £1 8s. extra.

With these Wagons and Hand Baskets four men with a lad and one horse can clear off 40 tons of Beet-root per day of ten hours in fields 350 yards long.

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DECAUVILLE'S PATENTS

CONTINUED.

WAGONS. CLASS II.

Type No. 3, General Carrier Wagons, to carry 12 cwt.

In these Wagons the axles are of steel mounted on Wheels, two of which are fixed and the other two loose, for turning curves readily.

The bearings are of brass.

	16 in. Gauge.	20 in. Gauge.
No. 3, General Carrier Wagons, 2 feet long	£2 12 0	£3 0 0

Fittings for use with Wagons No. 3.

	16 in. Gauge.	20 in. Gauge.	24 in. Gauge.
Fixed open-worked Iron Basket, to carry Manure, Corn, Straw, &c.	£1 16 0	£1 18 6	£2 2 0
Single Tipping Box of iron, with Patent Self-acting Door, containing 7 cubic feet	£3 0 0	£3 0 0	£3 0 0
Swivelling Fork and Fittings, 1 ft. 8 in. diameter, to carry trees of any length	£0 16 0	£1 0 0	£1 4 0
Type No. 4.—General Platform Wagons, fitted with channel iron Sides and brass Bearings, and sheet iron or wooden Platform, 4 feet long, 2 feet 8 inches broad	£3 10 0	£4 0 0	£5 0 0

Fittings for use with Wagons No. 4.

Fixed open-worked Iron Basket, to carry Manure, Corn, Straw, &c., 4 ft. 6 in. long, 3 ft. 6 in. wide, and 4 ft. 4 in. high	£2 2 0	£2 4 0	£2 6 0
Double Equilibrium Tipping Boxes and fittings, for carrying Earth, Lime, &c. ... containing 8 cub. ft.	£3 10 0	£3 10 0	£3 10 0
Ditto ditto ditto „ 12 „	£3 16 0	£3 16 0	£3 16 0
Ditto ditto ditto „ 16 „	£4 2 0	£4 2 0	£4 2 0
Ditto ditto ditto „ 20 „	£4 10 0	£4 10 0	£4 10 0
Swivelling Fork and fittings, 2 ft. 6 in. diameter, for carrying trees of any length	£1 8 0	£1 12 0	£1 16 0
Corner Upright and Crossbars, with holes for fitting on sides	£1 4 0	£1 4 0	£1 4 0

Brakes for any of the above Wagons, £1 8s. extra.

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DECAUVILLE'S PATENTS

(CONTINUED).

WAGONS. CLASS II.

	16 in. Gauge.	20 in. Gauge.	24 in. Gauge.
Type No. 5.—General Platform Wagon (similar to No. 4), 5 feet long, 3 ft. 3 in. wide	£4 8 0	£4 15 0	£5 15 0
Fittings for use with Wagon No. 5.			
Corner Uprights and Crossbars, with holes for fitting on sides	£1 4 0	£1 4 0	£1 4 0
Moveable Sides in wood	£1 12 0	£1 12 0	£1 12 0
Sheet-iron Ends	£0 16 0	£0 16 0	£0 16 0
Type No. 6.—General Carrier Wagon, fitted with improved Grease Boxes, and brass Bearings and **Central Buffer**; 3 ft. 3 in. long	£3 8 0	£3 16 0	£4 16 0
Fittings for use with Wagons No. 6.			
To carry Sugar Cane, &c., &c.			
Basket of open iron work, 4 ft. 6 in. long, 3 ft. 6 in. wide, and 4 ft. 4 in. high	£2 2 0	£2 4 0	£2 6 0
Platform for use with two Carriers, one end of which is pivoted on each Carrier, forming a Bogie Wagon, 10 ft. long, 3 ft. 6 in. wide	£7 6 0	£7 16 0	£8 12 0
Single Tipping Box of iron, with Patent Self-acting Door, and fittings ... ... containing 7 cub. ft.	£3 0 0	£3 0 0	£3 0 0
Ditto ditto ditto „ 11 „	£3 12 0	£3 12 0	£3 12 0
Double Equilibrium Tipping Box and fittings ... ... „ 8 „	£3 10 0	£3 10 0	£3 10 0
Ditto ditto ditto „ 12 „	£3 16 0	£3 16 0	£3 16 0
Swivelling Fork, for carrying Trees ...diam. 1 ft. 8 in.	£0 16 0	£1 0 0	£1 4 0
Ditto ditto „ 2 ft. 6 in.	£1 8 0	£1 12 0	£1 16 0
Corner Uprights and Crossbars, with holes for fitting sides	£1 4 0	£1 4 0	£1 4 0

Brakes for any of the above Wagons, £1 8s. extra.

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DECAUVILLE'S PATENTS

(CONTINUED).

Estimate for Clearing Fields, &c., of Root Crops.

LINE No. 1.

16 in. Gauge. 10 lb. **STEEL** Rails.

80	15-ft. Lengths	400 yds.	at 3/6 per yard	£70	0 0
4	8-ft. „	10 yds. 2 ft.	„ 3/6 „	£ 1	17 4
4	4-ft. „	5 yds. 1 ft.	„ 3/6 „	£ 0	18 8
6	8-ft. Lengths of Curved Line, 3 right & 3 left	16 yds.	„ 5/3 „	£ 4	4 0
4	4 ft. „ „ „ 2 „ & 2 „	5 yds. 1 ft.	„ 5/3 „	£ 1	8 0
2	Two-way Crossings for two Lines		„ 40/- each	£ 4	0 0
2	Switches for ditto, No. 1		„ 5/- „	£ 0	10 0
6	Pass-Everywheres		„ 2/6 „	£ 0	15 0
2	Inclined Planes for throwing off Branch Lines		„ 14/- „	£ 1	8 0
24	Light Carrier Wagons, Type No. 1		„ 32/- „	£38	8 0
35	Hand-Barrows for carrying Turnips, &c.		„ 15/- „	£26	5 0
4	Drag Chains, 5 yards long		„ 11/- „	£ 2	4 0
1	Tool Box		„ 15/- „	£ 0	15 0
				£152	13 0

NOTE.—For Wagon No. 1 may be substituted Wagon No. 2, if Platform Wagons for light materials, such as Peat, &c., are required; or Wagons No. 3, 4, and 6, if stronger Wagons and other fittings are required.

Estimate for ordinary Farm Work.

LINE No. 1.

16 in. Gauge. 10 lb. **STEEL** Rails.

176	15-ft. Lengths	880 yds.	at 3/6 per yard	£154	0 0
8	8-ft. „	21 yds. 1 ft.	„ 3/6 „	£ 3	14 8
8	4-ft. „	10 yds. 2 ft.	„ 3/6 „	£ 1	17 4
2	Two-way Crossings		„ 40/- each	£ 4	0 0
1	Right Hand do.		„ 40/- „	£ 2	0 0
1	Left Hand do.		„ 40/- „	£ 2	0 0
2	Switches No. 2		„ 15/- „	£ 1	10 0
2	„ 3		„ 22/6 „	£ 2	5 0
8	8-ft Curves	21 yds. 1 ft.	„ 5/3 „	£ 5	12 0
4	4-ft „	5 yds. 1 ft.	„ 5/3 „	£ 1	8 0
2	Inclined Planes		„ 14/- „	£ 1	8 0
30	Wagons No. 3		„ 52/- „	£ 78	0 0
15	Manure Baskets		„ 36/- „	£ 27	0 0
6	Single Tipping Boxes, 7 cub. feet		„ 60/- „	£ 18	0 0
2	Swivelling Forks		„ 16/- „	£ 1	12 0
1	Tool Box		„ 15/- „	£ 0	15 0
				£305	2 0

NOTE.—For Wagon No. 3 may be substituted Wagons No. 4 or No. 6, if Platform Wagons and larger Tipping Boxes and Swivelling Forks are required.

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DECAUVILLE'S PATENTS

(CONTINUED).

Estimate for Sugar Estates.

1st Main Line—A Line from the Field to the "Batey."

LINE No. 2.

20 in. Gauge. 14 lb. **STEEL** Rails.

			Price. £	s.	d.	Approximate Weight. tons	cwt.	qrs.	lbs.
880 12-ft. Lengths ...	3,520 yards (2 miles) at	5/- per yard	880	0	0	51	9	1	4
15 6-ft. ,, ...	30 ,,	,, 5/- ,,	7	10	0	0	9	2	1
10 4-ft. ,, ...	13 ,, 1 foot	,, 5/- ,,	3	6	8	0	4	0	22
20 6-ft. Curves, 10 right-hand and 10 left-hand	40 ,,	,, 6/9 ,,	13	10	0	0	12	0	16
6 4-ft. Curves, 3 right-hand and 3 left-hand	8 ,,	,, 6/9 ,,	2	14	0	0	2	1	18
4 4ft. Lengths Level Crossings	5 ,, 1 foot	,, 12/3 ,,	3	5	4	0	2	0	0
10 Crossings for two lines, 5 right-hand and 5 left-handed		,, 50/- each ..	25	0	0	0	11	2	22
10 Switches No. 3		,, 27/- ,, ...	13	10	0	0	6	0	18
18 Pass-Everywheres		,, 4/6 ,, ...	4	1	0	0	1	2	0
6 Inclined Planes, for throwing off Branch Lines...		,, 15/- ,, ...	4	10	0	0	2	2	0
	Amount carried forward		£957	7	0	54	1	1	17

Lines like the above have the following advantages :—

1st. They can be laid without skilled labour.

2nd. They can be removed when required from one part of the estate to another, and thus a much less quantity is required.

3rd. Sleepers are dispensed with altogether, except in very soft places.

4th. All difficulties from variation of Gauge are done away with.

5th. When all expenses are taken into consideration, the first cost is less than that of an ordinary fixed line.

6th. The wear and tear is reduced to a minimum.

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DECAUVILLE'S PATENTS

(CONTINUED).

Estimate for Sugar Estates.

2nd Light Line for Clearing the Fields, to join the Main Line.

LINE No. 1.

20 in. Gauge. 10 lb. STEEL Rails.

			Price. £	s.	d.	Approximate Weight. tons	cwt.	qrs.	lbs.
80 15-ft. Lengths	400 yds.	at 3/9 per yard	75	0	0	4	6	2	0
4 8-ft. „	10 yds. 2 ft.	„ 3/9 „	2	0	0	0	2	1	8
4 4-ft. „	5 yds. 1 ft.	„ 3/9 „	1	0	0	0	1	1	0
8 8-ft. Curves, 4 right and 4 left.	21 yds. 1 ft.	„ 5/6 „	5	17	4	0	4	2	0
4 4-ft. Curves, 2 right and 2 left.	5 yds. 1 ft.	„ 5/6 „	1	9	4	0	1	1	0
2 Two-way Crossings		„ 46/- each ...	4	12	0	0	2	1	0
2 Switches No. 3...		„ 23/6 „ ...	2	7	0	0	1	3	0
12 Pass-Everywheres		„ 2/9 „ ...	1	13	0	0	1	0	0
2 Inclined Planes		„ 15/- „ ...	1	10	0	0	0	3	0
70 No. 6 Carrier Wagons		„ 76/- „ ...	266	0	0	15	15	0	0
70 Sugar Cane Baskets of open iron-work to fit on to the above Carriers, 4 ft. 6 in. long, 3 ft. 6 in. wide, and 4 ft. 4 in. high		„ 44/- „ ...	154	0	0	4	7	2	0
6 Platforms for use with two of above Carriers, forming a Bogie Wagon 10 ft. long, 3 ft. 6 in. wide		„ 156/- „ ...	46	16	0	1	10	0	0
12 Double Tipping Boxes, contents 12 cub. ft.		„ 76/- „ ...	45	12	0	1	4	0	0
12 Sets of Corner Uprights and Crossbars, with holes for fitting sides		„ 24/- „ ...	14	8	0	0	7	0	0
12 Swivelling Forks for carrying Trees, 1 ft. 8 in. diameter...		„ 20/- „ ...	12	0	0	0	9	0	0
12 Brakes		„ 28/- „ ...	16	16	0				
6 Drag Chains		„ 11/- „ ...	3	6	0	0	1	0	0
1 Tool Box			0	15	0				
Duplicate			10	0	0				
			665	1	8	28	15	0	8
Amount brought forward			957	7	0	54	1	1	17
Grand Total			£1,622	8	8	82	16	1	25

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AMERICAN POST HOLE DIGGER AND TREE PLANTER.

This useful Digger is a kind of double Spade, and is fitted with two jointed Blades 9 inches long, working opposite to each other The movement of the two Blades is regulated by a Hand Lever attached to the Handle.

The Digger is thrust into the ground with the Blades open in a parallel position, they are then closed by the Hand Lever so as to grasp the sand or dirt to bring it to the surface.

It will dig to a depth of four feet; the length of the whole tool being five feet.

Price... ... ... £1 0 0

POTATO DIGGERS.

ASPINWALL'S PATENT POTATO DIGGERS.

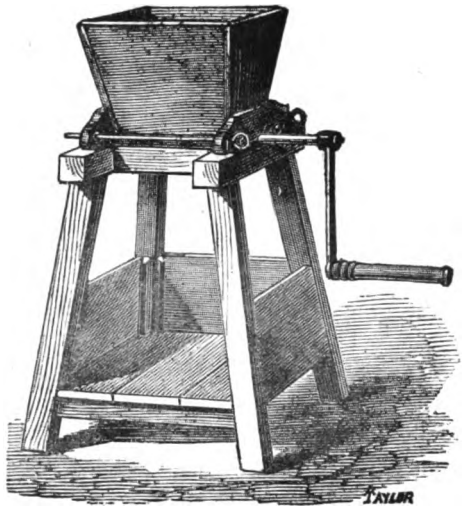
These Machines will dig from five hundred to a thousand bushels of Potatoes per day with two horses travelling at the rate of 60 yards per minute. They will work in wet or dry land and amongst green or dry tops.

The working parts of the Diggers consist of a Divider for separating the tops, a Plough to lift the ridge, and a Revolving Screw, composed of flat sections, which separates the Potatoes from the soil.

Price £20 0 0

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IMPROVED ALBION POTATO MASHERS.



This Machine is very useful for mashing boiled Potatoes and Roots for pig feeding, &c.

No. 1 Masher, as illustrated £2 7 6

No. 2 Masher, upon the same principle as the No. 1 Machine, but without legs, for placing on a tub or pan £1 17 6

ASPINWALL'S

PATENT POTATO PLANTERS.

These Machines are adapted for planting Potatoes on the flat or ridge by means of a system of needle points, which catch the Potatoes one by one and deposit them singly at any desired distance.

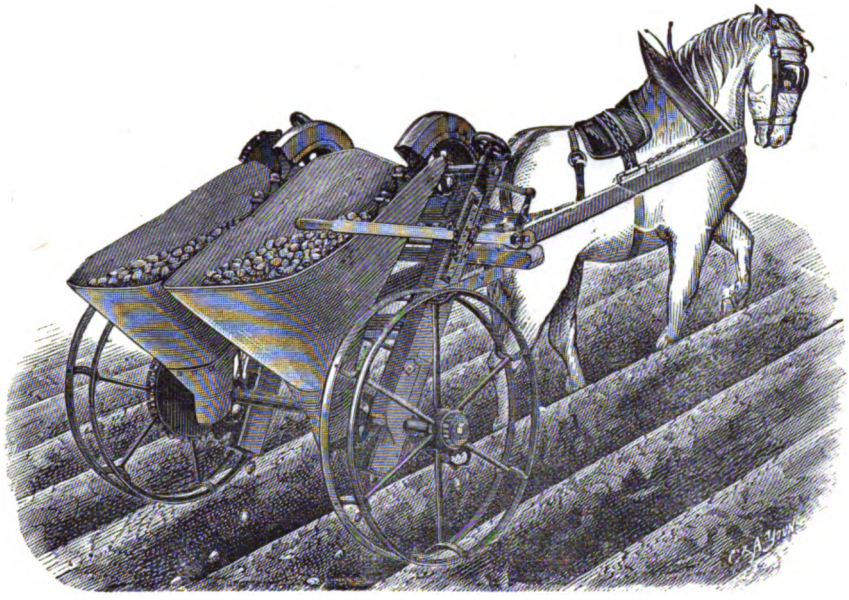
They will plant five acres per day.

Price £12 0 0

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MURRAY & FERGUSON'S

PATENT POTATO PLANTERS.



These Planters are made in three sizes, to plant one, two, and three rows at a time.

The one and two-row Machines are usually made to plant one distance apart, viz., 12 inches, but they can be fitted to plant three distances apart at the prices mentioned.

The three-row Machine is made to drop the seed at 10, 12, or 14 inches apart, as required.

PRICES:—

No. 1. One-row Machine, to plant one distance apart ... ... £ 7 7 0
If fitted to plant three distances apart, extra, £2.

No. 2. Two-row Machine, to plant one distance apart £14 0 0
If fitted to plant three distances apart, extra, £3.

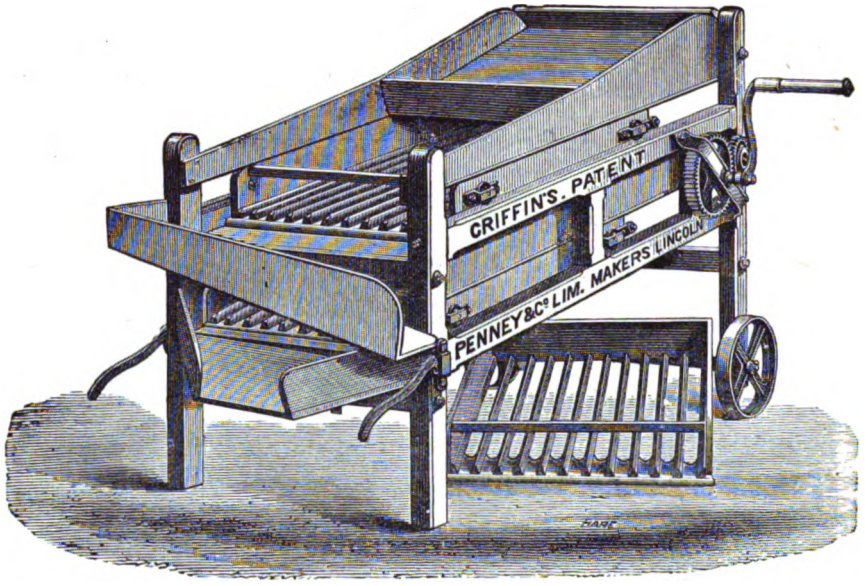
No. 3. Three-row Machine, to plant three distances apart £21 0 0

Any of these Machines can be fitted up to plant at any other distance apart that may be desired

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GRIFFIN'S

PATENT POTATO SEPARATORS.



(No. 3 from a Photograph.)

These Machines separate the Potatoes into three sizes—small, seed, and marketable; and riddle away the soil, at one operation, and can be easily worked by a boy.

The small size will do 6 to 8 tubs—120 to 160 stones per hour; the large size, 8 to 12 tubs—160 to 240 stones per hour.

The great advantage in these Machines is the *Combined Action* of the Riddles and Rollers, which prevents the Potatoes sticking fast or blocking up the Riddles.

The loose Riddle placed under the Machine in the engraving is merely to show the kind of Riddle used.

PRICES:—

No. 1. Small Machine	£ 8 10 0
No. 2. Large „	£11 5 0
No. 3. „ „ without Soil Screen	£10 10 0

Extra Riddles for any particular size as required.

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BRADFORD'S

PATENT POTATO WASHERS.

These Potato Washers are made with a Revolving Vertical Brush which washes the Potatoes thoroughly clean without causing any injury to their surfaces.

No. 1. Large size, will wash a sack of old potatoes quite clean and empty them into a hamper by a self-acting motion in three minutes. If the potatoes are left in the Machine for five or six minutes longer they are sufficiently peeled, leaving only the eyes to be picked. Fitted with Reversing Gear for Steam Power.

Price £15 15 0

No. 2. Medium size for Hospitals, Workhouses, &c., for Hand Power.

Price £10 10 0

No. 3. Small size for Schools, Hotels, and large Private Establishments.

Price ... ... £ 6 6 0

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HILL & SMITH'S

PORTABLE GALVANIZED FENCE

For Poultry Yards.

The wire work of this Fence is galvanized and made in 4 feet lengths, ready to fix to Double-Pronged Standards with Bolts and Nuts.

Intermediate Standards of round iron, with pronged feet, are supplied, which materially stiffen the Fence.

Price, 6 feet high	per yard	£0	6 6
Price, 7 feet high	„	£0	7 6

Including iron Standards and the necessary Bolts and Nuts for securing the panels.

Doors, extra, 4/- each.

POULTRY INCUBATORS.

VOITELLIER'S ARTIFICIAL INCUBATORS.

These Incubators require very little attention. The temperature is maintained at 100 degrees Fahrenheit by pouring boiling water into the Incubators every morning and evening, the cold water being previously drawn off.

The eggs require turning twice a day, and the Incubator should be left open for half an hour on each occasion.

No. 1. Incubator for 50 Eggs	£2	0	0
No. 2. „ 100 „	£4	0	0
No. 3. „ 120 „	£4	16	0
No. 4. „ 160 „	£6	8	0

Thermometers for Incubators, each, 8/-.

VOITELLIER'S ARTIFICIAL MOTHERS.

No. 1 Mother	£1	4	0
No. 2 „	£2	0	0
No. 3 „	£2	8	0
No. 4 „	£3	0	0

Ovoscopes for looking into eggs, each, 4/-. Delivered at Mantes. Packing extra.

This system is in successful operation at the Jardin d'Acclimatation, Paris.

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CHRISTY'S

POULTRY INCUBATORS.

	£ s. d.	Packing. £ s. d.
Hydro-Incubator for 90 eggs	4 10 0	0 7 6
Stand for ditto	0 8 6	— —
Commercial Hydro-Incubator for 250 eggs, fitted with one large Cistern and two Drawers	9 10 0	0 15 0
Hydro-Incubator for 500 eggs, fitted with two Cisterns and four Drawers ...	15 15 0	1 0 0
Stands for large Hydro-Incubator	1 0 0	— —
Thermometers for low and high range ... ...each	0 2 6	— —
Tell-tale Egg Tester	0 1 0	0 0 4
Open-air Rearers, consisting of a Hydro-Rearing Mother, a large Park, Glass Frames and Zinc Dome, to insure a dry run in all weathers. May be used in a Field or Shrubbery. Suitable for Poultry, Pheasants, &c.	4 17 6	0 7 6
Hydro-Rearing Mother for 75 chicks, fitted with 4 Sliding Ventilated Zinc Doors, with Park, Feeding-troughs and Pedestal	2 10 0	0 6 6
A large Park, 4 Glass Frames, a Zinc Dome and all necessary to convert a Hydro-Rearing Mother into a Open-air Rearer	2 12 6	0 3 6
Adjustable Wire Fencing (for use with Open-air Mothers), with pins, per panel of 24 in. by 22 in.	0 1 8	— —
Artificial Syphon Mother	0 17 8	— —
The "Engraisseuse," an improved Fattening Pen for Poultry, &c., with 6 compartments	3 18 0	0 1 6
The "Engraisseuse," an improved Fattening Pen for 4 birds	2 16 0	0 1 6
Zinc Feeding Troughs for young chickens ... ...per dozen	0 8 0	0 1 0
Pedestals or Billots	0 0 9	— —
Extra Earth Trays, for use inside the egg drawers... ... ... each	0 1 0	— —
Large four-legged funnels (strongly recommended) .. .. each	0 4 6	— —

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AMERICAN PATENT PORTABLE HAND POWER PRESSES,

For Hay, Straw, Rags, Wool, &c.

These Presses are very convenient and economical for pressing Hay, Cotton, Hides, Hair, Hemp, Corn, Straw, Husks, Moss, Wool, &c., by Hand Power, into neat, compact bales, for market or transport.

No. 1. For general farm use £20 0 0

No. 2. For heavier work £30 0 0

"BOOMER" HAY PRESSES.

The power is obtained in these Presses by a combination of four Arms or Levers working on Toggle Joints. A right and left hand screw passes through the Joints and causes them to approach to, or diverge from, each other, according to the direction of the rotation of the screw.

No. 1. Hand Press, to take in three **Trusses of Hay**, weighing 56 lbs. each, each 40 in. by 30 in. by 18 in.; size of pressed Truss when finished, 40 in. by 30 in. by 15 in. Readily worked by two men.

Price ... ... £ 75 0 0

No. 2. Steam or Horse Power Press, for pressing Hay in **Trusses**. Same dimensions as No. 1.

Price £125 0 0

No. 3. Hand Press, with Box, for baling Loose Hay; size of Bale, 3 ft. 6in. by 2 ft. by 1 ft. 6 in.; size of box, 3 ft. 6 in. by 2 ft. by 5 ft. The Box is provided with travelling wheels to run in and out of the Press, and is supplied with two false bottoms, so that it can be removed from the Press and be refilled while the Bale in the Press is being strapped.

Price £105 0 0

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PICKERING'S

PATENT DIFFERENTIAL PULLEY BLOCKS.

These Blocks will sustain the load without slipping. The lifting chain is supplied with a hook at each end so that no lowering is required for a fresh load: the working parts run on steel, and being internal they are free from dust and dirt. The two chains work independently of each other, thus reducing the friction while increasing the speed.

One man can lift from 15 to 20 cwt. without standing under the load.

Lifting Power.	Prices of Blocks.	Chains per foot of Lift, with Hooks and Endless Hand Chain.
5 cwt.	£ 1 10 0	1s. 9d.
10 cwt.	£ 1 17 0	2s. 0d.
15 cwt.	£ 2 2 0	2s. 6d.
20 cwt.	£ 2 10 0	3s. 0d.
30 cwt.	£ 3 0 0	3s. 4d
2 tons.	£ 3 10 0	3s. 4d.
3 tons.	£ 5 0 0	4s. 6d.
4 tons.	£ 6 0 0	4s. 6d.
6 tons.	£10 0 0	6s. 0d.
10 tons.	£20 0 0	10s. 0d.

TANGYE'S WESTON'S

PATENT DIFFERENTIAL PULLEY BLOCKS.

These Blocks will also keep the load suspended at any required point.

Chain Pulleys.

Tested to.	Prices of Blocks per set.	Bright Chain per foot.
	s. d.	s. d.
5 cwt.	12 6	0 6
10 cwt.	20 0	0 6
12 cwt.	20 0	0 7
20 cwt.	30 0	0 9
30 cwt.	40 0	0 10
2 tons.	50 0	0 11
3 tons.	100 0	1 1
4 tons.	120 0	1 3

When worked from below by pulling the chain, about four times the length of lift is required.

Pulley, with Ratchet, by which one man can lift the weight specified.

Tested to.	Prices of Blocks per set.	Bright Chain per foot.
	s. d.	s. d.
1 ton.	50 0	0 9
1½ tons.	60 0	0 10
2 tons.	70 0	0 11
3 tons.	100 0	1 1

Length of chain required, about three times height of Lift.

Pulley with Spocket Wheel.

Tested to.	Blocks per set.	Bright Chain per foot.	Best prepared Rope per foot.
	s. d.	s. d.	d.
2 tons.	75 0	0 11	5
3 tons.	110 0	1 1	6
4 tons.	135 0	1 3	6

Length of chain required, about three times height of Lift.

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MACKIE'S

PATENT WROUGHT IRON SPRING DRUMS OR PULLEYS.

These Pulleys are light, strong, and durable. The Arms and Periphery are constructed of wrought iron or steel. The Boss and the Band are split or divided, so that the Pulley can be slipped on to the shafting and fixed in a few minutes.

PRICES:—

Inches. Diam.	Breadth on Face in Inches. 3	4	5	6	7	8	9	10	11	12-In.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
10	13 0	14 6	15 6	17 0	19 0	20 6	23 0	25 6	29 0	32 0
12	14 0	15 6	16 6	18 0	20 0	22 0	24 0	26 6	30 0	33 0
14	15 0	16 6	17 6	19 0	21 0	22 6	25 0	27 6	31 0	34 0
16	17 0	18 0	19 0	20 6	22 6	24 0	26 6	29 0	32 6	35 6
18	18 0	20 0	22 0	24 0	25 6	27 6	29 6	30 6	34 0	36 6
20	19 6	22 0	24 6	26 6	28 6	30 0	31 6	33 0	35 0	38 0
22	22 6	24 0	27 0	29 6	31 6	33 0	35 0	37 0	39 0	41 0
24	25 0	27 6	29 6	32 0	34 0	36 0	38 0	40 0	42 0	44 0
26	28 0	30 0	32 6	35 0	37 0	39 0	41 6	43 6	45 6	48 0
28	31 6	34 0	35 6	37 6	40 0	42 6	44 6	47 6	49 6	51 6
30	33 0	35 6	38 0	40 0	42 6	44 6	46 6	49 0	51 6	55 0
32	35 6	37 6	40 0	42 6	45 0	47 6	50 0	52 6	55 0	57 6
34	37 6	40 0	42 6	45 0	47 6	50 0	52 6	55 0	57 6	60 0
36	40 0	42 6	45 0	47 6	50 0	52 6	55 0	57 6	60 0	63 0
38	45 0	48 0	51 0	52 6	55 0	57 6	60 0	63 0	67 0	70 0
40	47 0	50 0	53 0	56 0	59 0	62 0	65 0	69 0	72 0	75 0
42	49 0	52 6	56 0	59 6	62 6	65 6	68 6	72 6	75 6	80 0
44	55 6	59 0	63 0	66 0	69 0	72 0	75 0	79 0	83 0	86 0
46	60 0	63 0	66 0	69 0	72 0	75 0	78 0	82 0	86 0	90 0
48	62 6	65 6	68 6	71 0	74 0	77 0	80 0	84 0	88 0	92 0
50	67 6	70 6	73 6	76 0	79 0	82 0	85 0	89 0	93 0	97 0
52	72 6	75 6	78 6	81 0	84 0	87 0	90 0	94 0	98 0	102 0
54	77 6	80 6	83 6	86 0	89 0	92 0	95 0	99 0	103 0	107 0
56	82 6	85 6	88 6	91 0	94 0	97 0	100 0	104 0	108 0	112 0
58	87 6	90 6	93 6	96 0	99 0	102 0	105 0	109 0	113 0	117 0
60	92 6	95 6	98 6	101 0	104 0	107 0	110 0	114 0	118 0	122 0
62	98 6	101 6	104 6	107 0	110 0	113 0	116 0	120 0	124 0	128 0
64	104 6	107 6	110 6	113 0	116 0	119 0	122 0	126 0	130 0	134 0
66	110 6	113 6	116 6	119 0	122 0	125 0	128 0	132 0	136 0	140 0
68	116 6	119 6	122 6	125 0	128 0	131 0	134 0	138 0	142 0	146 0
70	122 6	125 6	128 6	131 0	134 0	137 0	140 0	144 0	148 0	152 0
72	128 6	131 6	134 6	137 0	140 0	143 0	146 0	150 0	154 0	158 0
74	134 6	137 6	140 6	143 0	146 0	149 0	152 0	156 0	160 0	164 0
76	140 6	143 6	146 6	149 0	152 0	155 0	158 0	162 0	166 0	170 0
78	148 0	151 0	154 0	156 6	159 6	162 6	165 6	169 6	173 6	177 6
80	158 0	161 0	164 0	167 6	169 6	172 6	175 6	179 6	183 6	187 6
82	168 0	171 0	174 0	177 0	179 6	182 6	185 6	189 6	193 6	197 6
84	178 0	181 0	184 0	187 0	189 6	192 6	195 6	199 6	203 6	207 6

In ordering, state if the Pulleys are to be flat or rounded on face.

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ABYSSINIAN OR PITCHER PUMPS.

These Pumps are suitable for shallow wells or cisterns, and will lift a greater quantity of water with a given power than any other form of pump.

They are fitted with improved Conical Valves and Reversible Handles, Anti-freezing, and well adapted for domestic and out-door purposes.

No. 1. 2½ inch bore for ¾ or 1 inch pipe	each	£0	18 0
No. 2. 3 inch bore for 1 or 1¼ inch pipe	„	£1	1 0
No. 3. 3½ inch bore for 1¼ or 1½ inch pipe	„	£1	4 0
No. 4. 4 inch bore for 1½ or 1¾ inch pipe...	„	£1	7 0

DOUGLAS PUMPS.

These Pumps are designed to lift water any height not exceeding 33 feet; the handles can be shifted round to any convenient point.

The Pumps are provided with Screw Couplings, Brass Tubes, and proper connections for wrought iron or lead pipe, and are arranged so that the lower valve or box is readily accessible without detaching the pipes or disturbing the platform. They are also anti-freezing.

	Gallons per minute.	Price.
No. 0. 2 inch bore for ¾ inch pipe	6	£0 14 0
No. 1. 2¼ inch bore for ¾ or 1 inch pipe	8	£0 16 0
No. 2. 2½ inch bore for 1 or 1¼ inch pipe	12	£0 18 0
No. 3. 2¾ inch bore for 1¼ or 1½ inch pipe	15	£1 0 0
No. 4. 3 inch bore for 1½ or 1¾ inch pipe	22	£1 2 0
No. 5. 3¼ inch bore for 1¾ or 2 inch pipe	26	£1 6 0
No. 6. 3½ inch bore for 2 or 2¼ inch pipe	30	£1 12 0

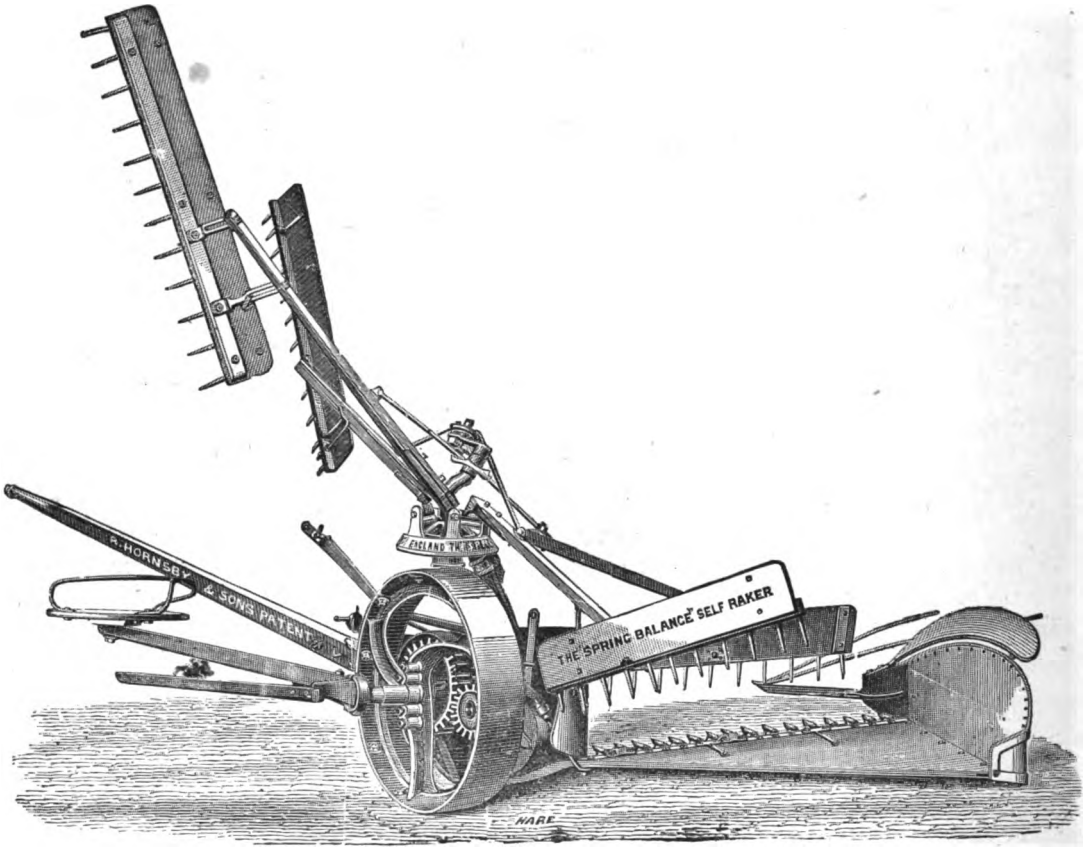
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HORNSBY'S

"SPRING BALANCE" SELF-RAKER.

(Not Controllable).

This Machine is carried by a Spring which prevents straining and jolting and permits it to be made lighter than would be possible otherwise without risk of breakage.



The Connecting Rod is jointed to the Knife Bar at some distance from the end, thereby reducing friction and increasing steadiness in working. Every Arm is fitted with Rake Heads which can be arranged to act as Rakes or Dummies very readily by changing the centres upon which they work.

The weight of the Machine is about 9¾ cwt. Width of cut 5ft. 3in. The Road Wheel is of cast iron.

Price of Patent Two-horse "Spring Balance" Self-Raker, with four Rakes for Sheaf or Swathe Delivery, with Interchangeable Rake Centres and two Knives	£29	0	0
If with six Rakes for Sheaf or Swathe Delivery as desired	£31	0	0
Extra, if fitted with Shaft to Pole	£ 1	0	0

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HORNSBY'S

"MATCHLESS" SELF-RAKER,

With Wrought Iron Road Wheel and new Interchangeable Rake Centres, (not Controllable.)

The construction of this Machine is similar to that of the "Spring Balance," but the Road Wheel is of wrought iron of larger diameter than the usual cast iron one.

The Divider Plate is bolted on the top of the Finger Bar instead of the bottom, enabling the Machine to cut lower without driving the soil before it.

The off wheel is fitted with a Patent Double-jointed Swivel, which turns freely without cutting up the crops. It can be raised or lowered easily and quickly.

The in and out Gear arrangement is actuated by the driver's foot without stopping his horses or letting go his reins.

The Lever for raising or lowering the Machine is placed close to the driver's seat, so that the height of cut can be altered while the Machine is in motion.

The Tilting Lever is also near the driver, so that he can use it easily and quickly.

The Platform is made to turn up by removing a single bolt, the extra Axle always remaining in position under the Platform to receive the Carrying Wheel when required.

Price of Patent Two-Horse "Matchless" Self-Raker, with four Rakes for Sheaf or Swathe Delivery, with wrought iron Road Wheel, improved Interchangeable Rake Centres and two Knives. Width of cut 5 feet ...	£30 0 0
If with six Rakes	£32 0 0
Extra, if fitted with Shaft to Pole	£ 1 0 0

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HORNSBY'S

NEW PATENT "SPRING BALANCE" SELF-RAKER,

With Wrought Iron Road Wheel and Five Controllable Rakes.

This Reaping Machine has a wrought iron Road Wheel of increased diameter instead of cast iron. The Geared Ring is made separate from the Road Wheel, so that the Ring can be taken off when broken or worn out by loosening three bolts.

Moveable Loose Bushes are fitted to the Road Wheel and the Divider Wheel so that they can be taken out and new ones put in at a small cost when required.

Every 3rd, 4th, or 5th Rake can be made to deliver the sheaves by moving a small handle, and the same mode of rotation will be continued mechanically as long as desired, but the driver can cause any one or any number of Rakes to pass over the sheaf on the Platform or rake it off at will.

New Patent Two-horse "Spring Balance" Self-Raker, with five Controllable Rakes and two Knives. Width of cut 5ft.	£32 0 0
Extra, if fitted with Shaft to Pole	£ 1 0 0
Turn-up Platform Arrangement ... ... extra	£ 0 10 0

HORNSBY'S

PATENT "GOVERNOR" SELF-RAKER.

This Machine is very strong, and is capable of dealing with the heaviest crops.

Patent "Governor" Self-Raker, with 2 Knives, 2 Rakes, and 2 dummies. Width of cut 5ft. 3in.	£34 10 0
Extra, if fitted with Drivers Seat and Shaft to Pole...	£ 1 15 0
Extra, if fitted with two extra Rakes for Swathing	£ 0 15 0
Extra, if fitted with Biting Irons...	£ 0 9 0

HORNSBY'S

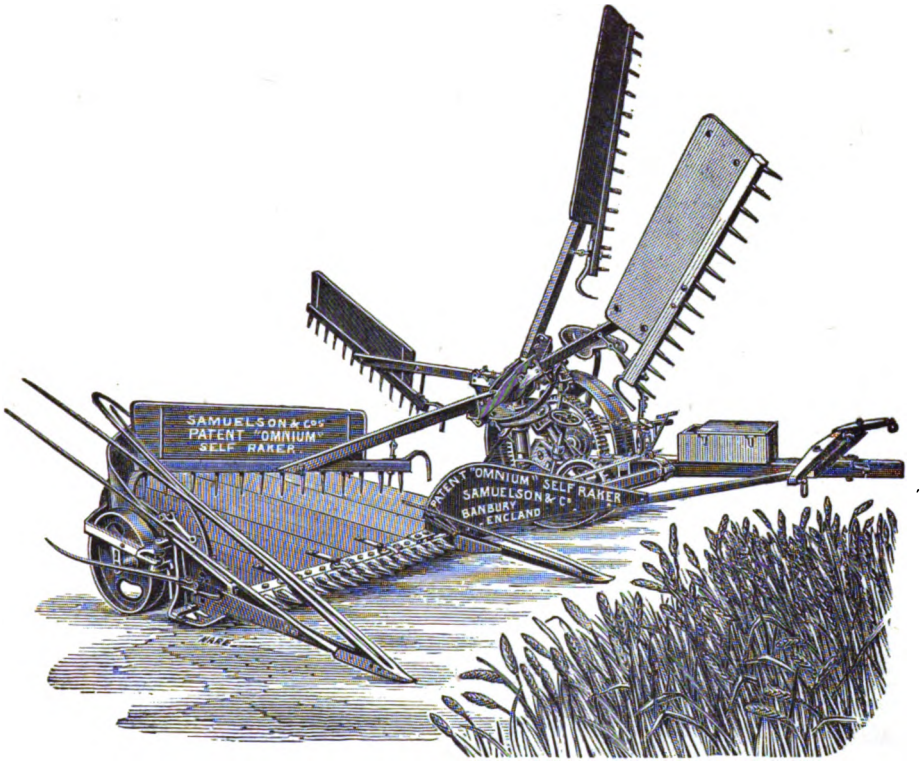
PATENT "PROGRESS" SELF-RAKER.

Patent "Progress" Self-Raker, with two Knives. Width of cut 5ft.	£32 0 0
If fitted with six Arms instead of four	£34 0 0
Extra, if fitted with Driver's Seat and Shaft to Pole	£ 1 15 0
Extra, if fitted with two extra Rakes for Swathing	£ 0 15 0
Extra, if fitted with Biting Irons	£ 0 9 0

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SAMUELSON'S

NEW PATENT "OMNIUM" SELF-RAKING REAPER.



This Machine is very compact, and will pass through an ordinary gateway by simply unshipping the driver's seat. The weight of the Platform, &c., is balanced by the driver, so that the Reaper will move in any direction with equal freedom, and no shaft is required for either of the horses.

The Finger Beam is placed in line with the main axle, so that the cut is more perfect over undulating surfaces; the Divider Wheel has a swivel arrangement to facilitate turning on soft land.

The points of the Fingers can be readily raised or lowered while at work, and the height of cut is easily and quickly altered by a Hand Wheel placed towards the front of the Machine.

The Platform is efficiently stayed and is particularly steady and free from vibration.

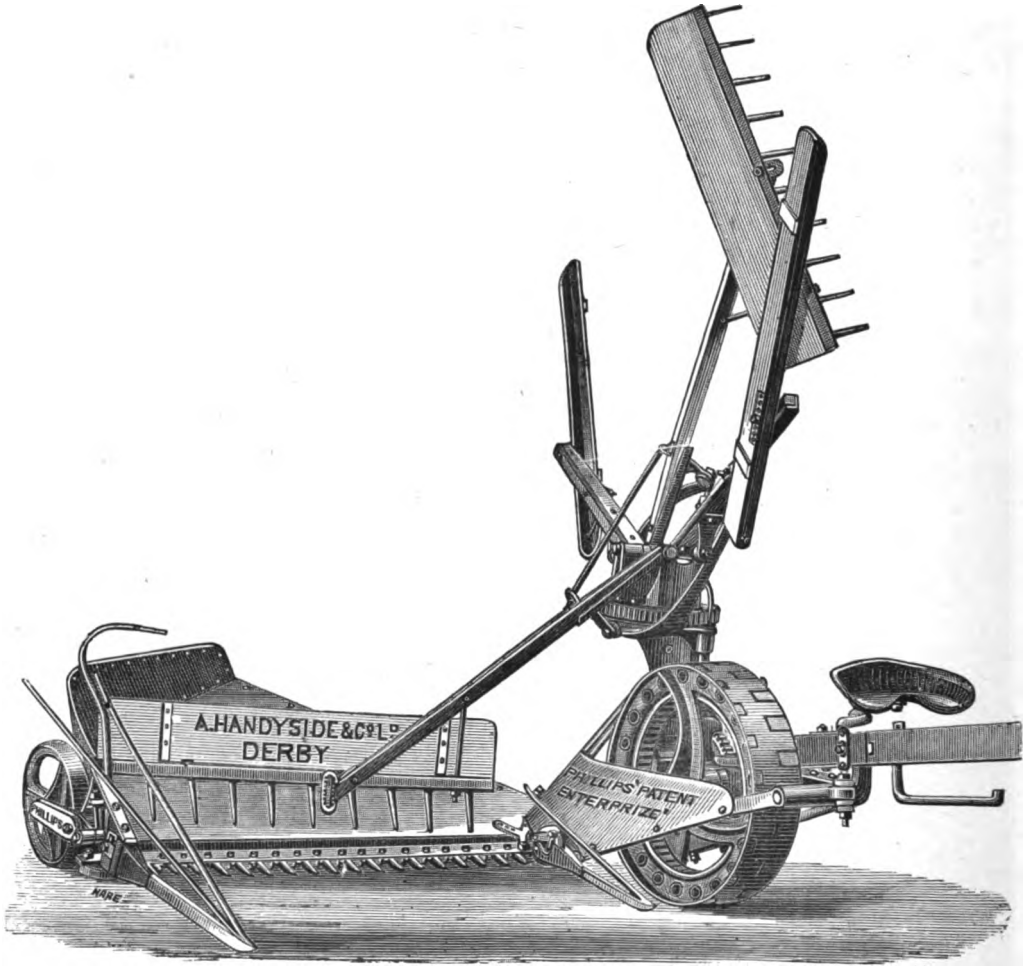
A "Head Lifter" is supplied free of charge, which effectually prevents the cutting off of the ears in laid crops.

Price of Patent Two Horse "Omnium" Reaper, with four Rakes and two Knives £27 10 0

If fitted with Apparatus for Controlling the Rakes ... ... extra £ 1 10 0

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PHILLIP'S PATENT
"COUNTERBALANCE" SELF-RAKER REAPING MACHINE.



The above Machine is of simple construction and convenient arrangement combined with adequate strength and light draught. The centre of the Rake Axis is placed over the Road Wheel, producing an excellent gathering action of the Rakes, which are rigidly coupled in pairs, so that the weight of one counterbalances the other thereby reducing the amount of draught very materially.

The Driving Gear is arranged so that the Crank Spindle is horizontal and gives a direct thrust to the Knife. The Crank is fitted with a Patent Self-Lubricating Arrangement which renders frequent stoppages for oiling unnecessary.

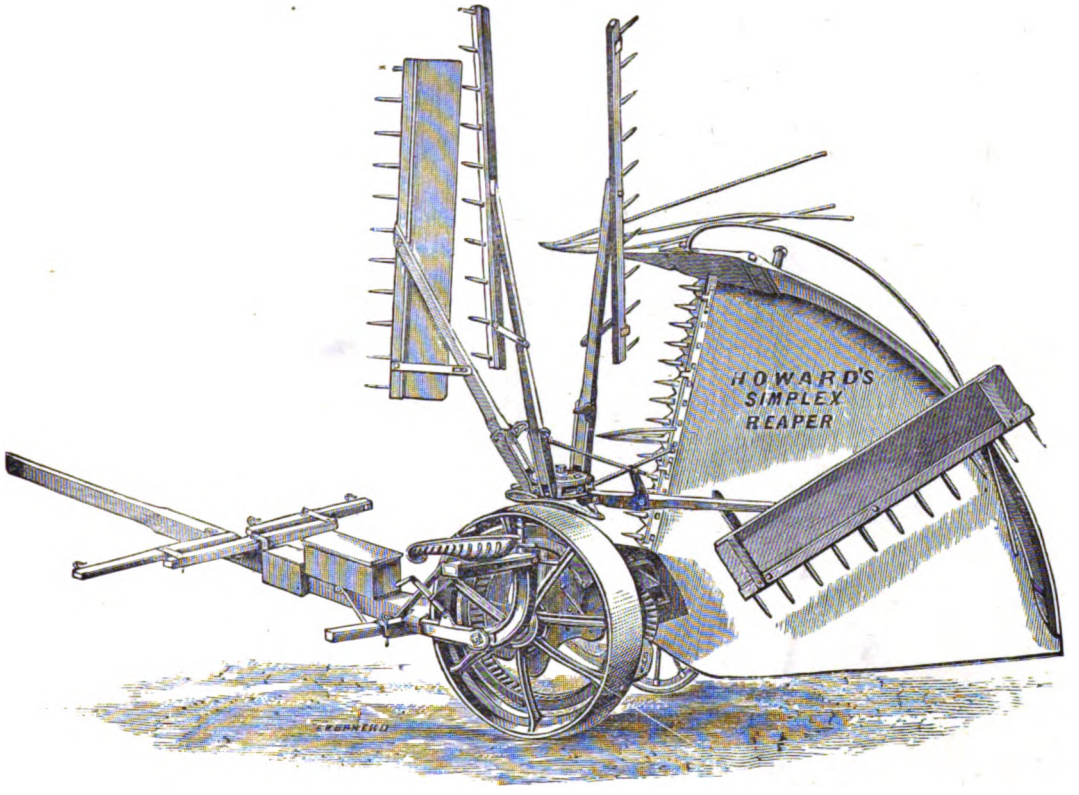
The Road Wheel is carried on a hollow axis which will keep this part of the Machine lubricated for several days after being once filled with oil.

The Machine is easily worked by a pair of horses, cuts 5 feet 3 inches wide, and will pass readily through an 8 feet gateway.

"Counterbalance" Self-Raking Reaper, fitted with Shaft and Pole and two Knives £31 0 0

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HOWARD'S
NEW PATENT "SIMPLEX" REAPER.



All the Gearing and parts of this Machine, subject to much strain, are made of wrought iron and steel.

The Road Wheel is constructed with openings through its rim, into which the pinion wheel gears, instead of the ordinary cogs; clogging is thus prevented, while a wheel of great strength is obtained with a reduced weight.

The Rakes are controlled by a simple foot lever, by which the size and moment of discharge of the sheaf can be regulated at pleasure.

The Platform can be turned up for convenience of transit as illustrated.

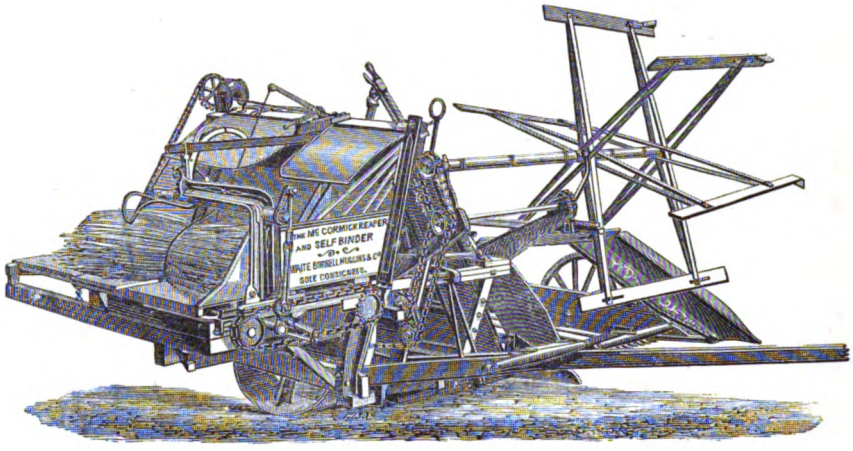
Price with two Knives, Seat, and Tool Box containing requisites for use in the field. Weight 10¼ cwt. £29 0 0

If desired, the road wheel can be hooped with wrought iron at a charge of ... £ 0 15 0

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McCORMICK'S

REAPER AND SELF-BINDER.



This machine gained the Gold Medal at the Bristol Trials of the Royal Agricultural Society of England, in 1878.

The Automatic Binder attached to the Reaper is of simple construction, and can be readily worked by an ordinary intelligent farm labourer.

The Machine-bound Sheaves are tighter and of more uniform size than those bound by hand.

A driver and a pair of good horses can cut and bind from 12 to 18 acres per day.

The Binding Wire is of best annealed steel, specially prepared for these Machines, and is supplied in cases of 10 spools, containing 20 lbs. each, at 6d. per lb.

Price of McCormick Reaper and Self Binder	£65	0	0
Shears for cutting the wire, each	0	7	6

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WOOD'S

NEW ONE-HORSE SELF-RAKING REAPING MACHINE.

For Farmers occupying small holdings this machine is very suitable.

The Rakes are controllable, and the Reaper is fully within the power of one horse.

Price of New Patent one-horse Self-Raker, with Four Controllable Rakes, and two Knives—width of cut 3 feet 6 inches £24 0 0

Price of New Patent one-horse Self-Raker, with Five Controllable Rakes and two Knives—width of cut 3 feet 6 inches £25 0 0

HORNSBY'S

NEW PATENT ONE-HORSE SPRING BALANCE SELF-RAKER REAPING MACHINE.

This Reaper has the same arrangement of Spring and other special features as Hornsby's two-horse machine.

The driver can raise or lower the Cutting Apparatus or alter the inclination of the finger-points while the machine is at work.

The Rakes are controllable, enabling the driver without stopping the machine to make the following variations, viz :—

Every Rake to deliver, making a swathe.

Every Third, Fourth, or Sixth Rake to deliver a sheaf.

Every Rake to pass over the sheaf.

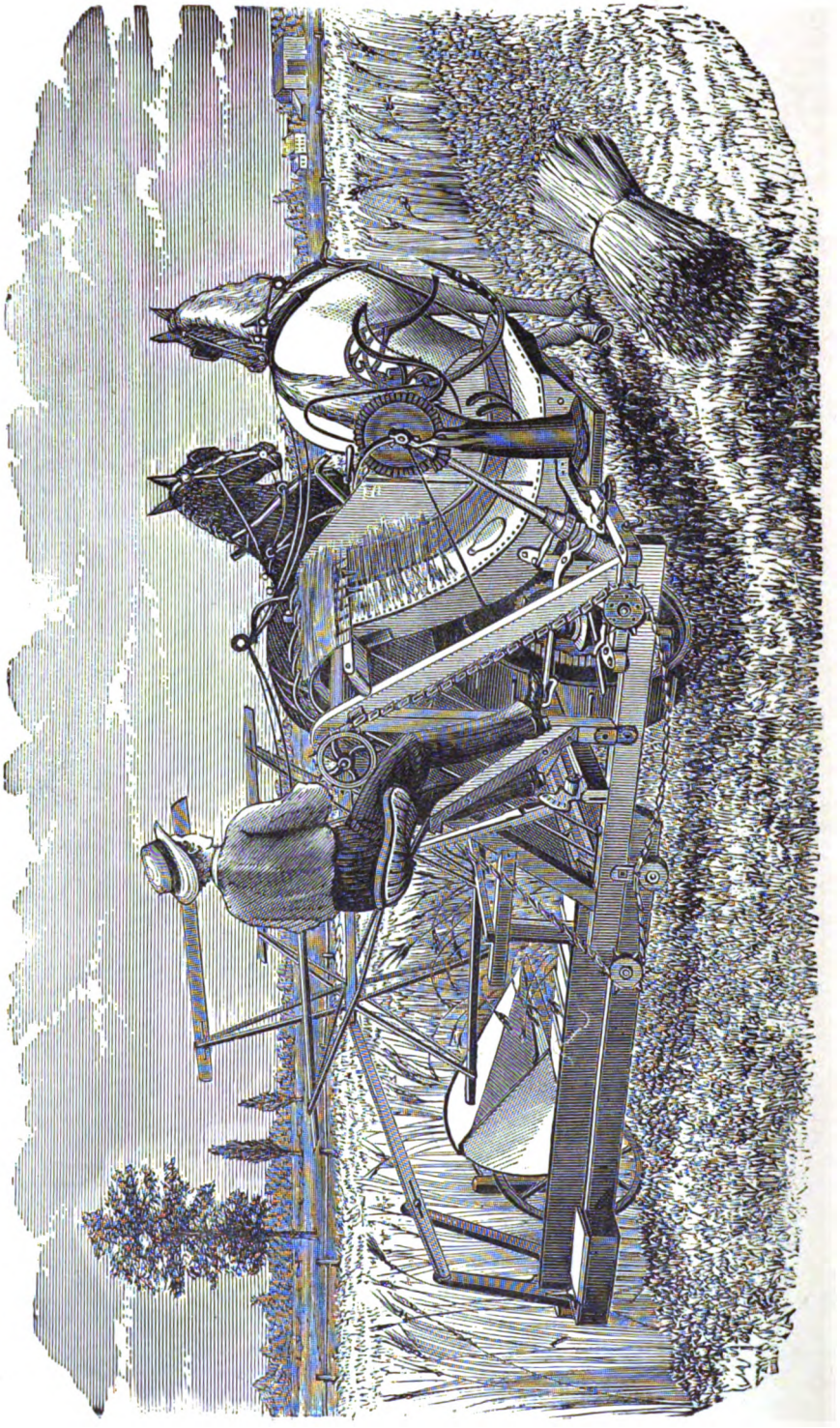
Hornsby's New Patent one-horse Spring Balance Self-Reaper, with Four controllable Rakes and two Knives, width of cut 3 feet 6 inches £24 10 0

"Turn up" Platform... ... . extra £0 10 0

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WOOD'S

SELF-BINDING REAPING MACHINE.



For description see next page.

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WOOD'S

SELF-BINDING REAPING MACHINE.

The Engraving on the preceding page illustrates one of the most successful Self-binding Reaping Machines, using wire for the binding material.

With straw not exceeding five feet in length, the machine can deal very satisfactorily, cutting and binding much cleaner and better than is possible by hand with the sickle.

A special feature of the "Wood" Binder is the delivery of the sheaf. The grain, after being firmly compressed, is bound and delivered clear of the machine, a decided advantage in matted, twisted, and heavy crops; and the verdict of operators of Machines is—"That in the ripest crops no loss of grain results from the manner of discharging the sheaf."

Recent and effective trials in Australia have confirmed this assertion. The exceedingly dry state of the crops during a hot harvest-time have given exceptional opportunity for testing this point, and sufficiently refute the theory of those who have failed to establish statements to the contrary.

No practical difficulty is caused by using wire for binding the sheaves, if the *special shears*, provided for cutting the wire bands, are used.

The average cost of the Wire used for binding, is 1s. 6d. per acre. Saving about 2s. 6d per acre over hand tying, besides the cost of raking, estimated at 1s. 6d. per acre.

Price with two Knives and extras £65 0 0

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RICK CLOTHS.

	ft.	ft.	£	s.	d.		£	s.	d.
To cover 20 loads	25 by	20	6	0	0	to	6	15	0
To cover 25 loads	30 by	24	8	15	0	to	9	15	0
To cover 30 loads	30 by	30	10	15	0	to	12	0	0
To cover 35 loads	33 by	30	11	15	0	to	13	5	0
To cover 40 loads	30 by	36	12	15	0	to	14	5	0
To cover 50 loads	36 by	36	15	5	0	to	17	2	0
To cover 60 loads	36 by	42	17	15	0	to	19	16	0
To cover 70 loads	42 by	42	20	10	0	to	23	2	0

IMPROVED DRESSED CLOTHS.

	ft.	ft.	£	s.	d.
To cover 2 loads Hay...	21 by	12	4	4	0
To cover 1 load Hay...	21 by	10	3	10	0
To cover 3 loads Grain	16 by	9	2	10	0
To cover 2 loads Grain	15 by	8	2	0	0
To cover 20 pockets Hops	21 by	15	5	5	0
To cover 30 pockets Hops	24 by	18	7	4	0
To cover 40 pockets Hops	24 by	24	9	12	0
To cover 50 pockets Hops	—	—	12	0	0

BEST CANVAS CLOTHS.

	ft.	ft.	£	s.	d.
To cover 2 loads Hay	21 by	12	3	3	0
To cover 1 load Hay	21 by	10	2	12	0
To cover 2 loads Grain	15 by	8	1	10	0
To cover 3 loads Grain	16 by	9	1	16	0

THRESHING CLOTHS.

ft.	ft.	£	s.	d.	ft.	ft.	£	s.	d.
18 by	12	1	10	0	18 by	18	2	5	0
24 by	18	3	0	0	24 by	24	4	0	0

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LIGHT'S

PATENT GALVANIZED IRON RICK COVERS.

The advantage claimed for this Patent Covering is, that for a comparatively small outlay a Permanent Rick Covering is obtained, which does not cost more than the amount expended in thatching in three or four seasons.

The pieces are made in sections, easily moved and placed on the Rick in a few minutes

	£	s.	d.
8 yards long by 5 yards wide	11	4	0
6 yards long by 5 yards wide	8	8	0
5 yards long by 5 yards wide	7	0	0
4 yards long by 5 yards wide	5	12	0
10 yards long by 6 yards wide	15	10	0
8 yards long by 6 yards wide	12	8	0
6 yards long by 6 yards wide	9	6	0
12 yards long by 7½ yards wide	21	12	0
10 yards long by 7½ yards wide	18	0	0
8 yards long by 7½ yards wide	14	8	0
6 yards long by 7½ yards wide	10	16	0

Prices and Sizes of W. BRENTON'S Patent Corrugated Iron Rick Covers.

	£	s.	d.	
12 feet long by 11 feet wide at Eaves	3	15	0	Covering about 13 ft. over Top of Stack.
16 feet long by 11 feet wide at Eaves	4	17	6	ditto ditto ditto
20 feet long by 11 feet wide at Eaves	6	13	0	ditto ditto ditto
24 feet long by 11 feet wide at Eaves	7	10	0	ditto ditto ditto
16 feet long by 12½ feet wide at Eaves	5	5	0	Covering about 15½ ft. over Top of Stack.
20 feet long by 12½ feet wide at Eaves	7	2	6	ditto ditto ditto
24 feet long by 12½ feet wide at Eaves	8	11	6	ditto ditto ditto
30 feet long by 12½ feet wide at Eaves	11	6	0	ditto ditto ditto
36 feet long by 12½ feet wide at Eaves	13	5	0	ditto ditto ditto
18 feet long by 14 feet wide at Eaves	7	4	0	Covering about 17 ft. over Top of Stack.
24 feet long by 14 feet wide at Eaves	9	10	0	ditto ditto ditto
30 feet long by 14 feet wide at Eaves	12	7	6	ditto ditto ditto
36 feet long by 14 feet wide at Eaves	14	2	6	ditto ditto ditto
20 feet long by 16 feet wide at Eaves	8	15	0	Covering about 19 ft. over Top of Stack.
24 feet long by 16 feet wide at Eaves	11	0	0	ditto ditto ditto
30 feet long by 16 feet wide at Eaves	13	10	0	ditto ditto ditto
36 feet long by 16 feet wide at Eaves	16	12	6	ditto ditto ditto
42 feet long by 16 feet wide at Eaves	20	2	6	ditto ditto ditto
24 feet long by 20 feet wide at Eaves	11	15	8	Covering about 23 ft. over Top of Stack.
30 feet long by 20 feet wide at Eaves	16	5	0	ditto ditto ditto
36 feet long by 20 feet wide at Eaves	20	10	0	ditto ditto ditto
42 feet long by 20 feet wide at Eaves	24	12	6	ditto ditto ditto

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PEARSON'S

VERMIN-PROOF IRON CORN RICK STANDS.

These Rick Stands afford a perfect protection from the Ravages of Vermin, insure Ventilation through the Stack, and preserve the grain from damp.

The supporting Pillars are of cast iron, with a mushroom shaped Cap which effectually excludes Vermin; the top Frame-work is entirely of wrought iron, with the ends dovetailed into the Pillars, imparting great solidity and strength to the Stands.

Prices of Circular Stands Complete, with all Malleable Iron Framing.

	£	s.	d.
9 feet diameter on 7 pillars, per set	2	8	0
10 feet diameter on 7 pillars, per set	2	16	0
11 feet diameter on 8 pillars, per set	3	8	0
12 feet diameter on 8 pillars, per set	3	16	0
13 feet diameter on 8 pillars, per set	4	8	0
13 feet diameter on 9 pillars, per set	4	14	0
14 feet diameter on 8 pillars, per set	4	16	0
14 feet diameter on 9 pillars, per set	5	4	0

	£	s.	d.
15 feet diameter on 9 pillars, per set	5	8	0
15 feet diameter on 10 pillars, per set	5	16	0
16 feet diameter on 10 pillars, per set	6	8	0
17 feet diameter on 12 pillars, per set	7	12	0
18 feet diameter on 21 pillars, per set	10	0	0
20 feet diameter on 21 pillars, per set	11	4	0
22 feet diameter on 23 pillars, per set	12	0	0

Prices of Circular Stands, without Inside Circulating Bars.

Rough Timber from 2 to 2½ inches diameter may be substituted for the Iron Inside Circulating Bars, when the prices will be as follows;—

	£	s.	d.
9 feet diameter on 7 pillars, per set	2	5	0
10 feet diameter on 7 pillars, per set	2	8	0
11 feet diameter on 8 pillars, per set	3	0	0
12 feet diameter on 8 pillars, per set	3	4	0
13 feet diameter on 8 pillars, per set	3	8	0
14 feet diameter on 8 pillars, per set	3	12	0

	£	s.	d.
14 feet diameter on 9 pillars, per set	4	0	0
15 feet diameter on 10 pillars, per set	4	16	0
16 feet diameter on 10 pillars, per set	5	0	0
17 feet diameter on 12 pillars, per set	6	0	0
18 feet diameter on 21 pillars, per set	8	0	0
20 feet diameter on 21 pillars, per set	8	8	0

The 12 feet and 13 feet diameter Stands on 8 Pillars for Oats, and the 15 feet and 16 feet diameter Stands on 10 Pillars for wheat, are the sizes most generally used.

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PEARSON'S

VERMIN PROOF OBLONG IRON CORN RICK STANDS.

All the Bars in the Frame-work dovetail into the Pillars, and the Stands can be made any desired length, detachable if necessary into various lengths.

Price of Oblong Stands with all Malleable Iron Framing.

		£	s.	d.
10 feet long by 8 feet wide, on 9 pillars	per set	4	0	0
12 feet long by 10 feet wide, on 9 pillars	per set	4	16	0
18 feet long by 12 feet wide, on 12 pillars	per set	6	11	6
24 feet long by 10 feet wide, on 15 pillars	per set	8	11	0
18 feet long by 12 feet wide, on 12 pillars	per set	7	15	0
24 feet long by 12 feet wide, on 15 pillars	per set	10	4	6
30 feet long by 12 feet wide, on 18 pillars	per set	12	1	0
18 feet long by 15 feet wide, on 16 pillars	per set	9	6	6
24 feet long by 15 feet wide, on 20 pillars	per set	13	1	0
30 feet long by 15 feet wide, on 24 pillars	per set	15	3	0
36 feet long by 15 feet wide, on 28 pillars	per set	17	9	0
42 feet long by 15 feet wide, on 32 pillars	per set	20	12	0
24 feet long by 20 feet wide, on 25 pillars	per set	15	15	0
30 feet long by 20 feet wide, on 30 pillars	per set	19	5	0
36 feet long by 20 feet wide, on 35 pillars	per set	22	17	0
42 feet long by 20 feet wide, on 40 pillars	per set	26	5	0

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PEARSON'S

VERMIN PROOF OBLONG IRON CORN RICK STANDS

(CONTINUED).

Prices of Oblong Stands without inside Cross Bars.

If intermediate Cross Bars of Timber are employed, instead of Iron ones, the prices are as follows :—

		£	s.	d.
10 feet long by 8 feet wide, on 9 pillars	per set	2	15	0
12 feet long by 10 feet wide, on 9 pillars	per set	3	7	0
18 feet long by 10 feet wide, on 12 pillars	per set	4	6	6
24 feet long by 10 feet wide, on 15 pillars	per set	5	19	6
18 feet long by 15 feet wide, on 16 pillars	per set	6	10	0
24 feet long by 15 feet wide, on 20 pillars	per set	9	1	6
30 feet long by 15 feet wide, on 24 pillars	per set	10	8	0
36 feet long by 15 feet wide, on 28 pillars	per set	11	5	0

An oblong stand 42 feet long by 15 feet wide, covering 630 square feet—can be put together by two men, in about an hour.

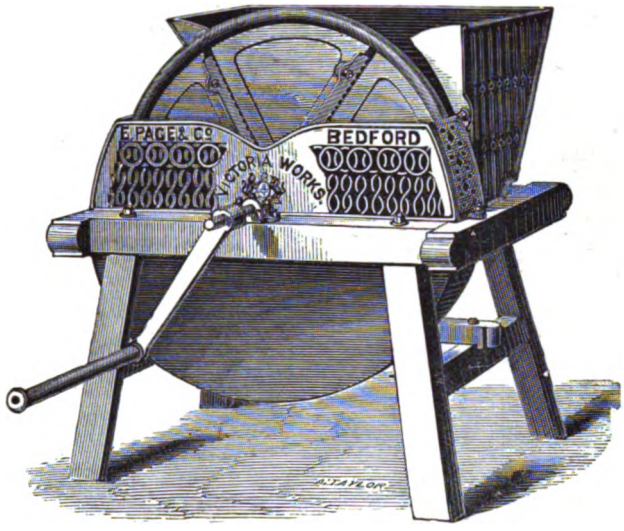
ROOFING AND OTHER FELTS.

	s.	d.	
Roofing Felt in Rolls		1	per square foot.
Inodorous Felt in Rolls		1	per square foot.
Sheet of 16 oz. Hair Felt, 34 inches by 20 inches		7	per square foot.
Sheet of 24 oz. Hair Felt, 34 inches by 20 inches		9	per square foot.
Sheet of 32 oz. Hair Felt, 34 inches by 20 inches		11	per square foot.
Sheet of 40 oz. Hair Felt, 34 inches by 20 inches	1	1	per square foot.
Sheet of 48 oz. Hair Felt, 34 inches by 20 inches	1	3	per square foot.
Roll of No. 1 Long Hair Felt, 20 yards	1	0	per yard.

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E PAGE & CO.'S

ROOT PULPERS.



The advantages to be derived from mixing pulp with the food for stock are well known; the animals feeding better and fattening sooner when the roots are minced before mastication.

These Pulpers are fitted with strong cast iron Discs, with heavy Rims which act as fly wheels. The knives are of cast steel which can be regulated to pulp finer or coarser by simply loosening a nut.

No. 1 P.	For Steam, Horse, or Hand Power, Disc 2 feet 9 inches diameter, fitted with six knives, each having 13 teeth	£4 12 6
No. 2 H.	For Hand Power, fitted with six knives each with 12 teeth	£4 0 0
No. 3.	For Hand Power, fitted with four knives	£3 5 0
No. 4.	For Hand Power, fitted with four knives...	£2 15 0

Pulleys extra according to size.

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HORNSBY'S

ROOT PULPERS.

In these Pulpers there are twelve rows of teeth, thirteen in each row; each tooth being separately held by a wedge. An oscillating cleaning bar, fitted with small projections, works between the teeth to keep them clean and also prevent the last piece escaping uncut.

LT.	Root Pulper, small size	£3 10 0
MT.	Root Pulper, medium size	£4 10 0
PT.	Root Pulper, large size...	£6 10 0

Pulleys extra according to size.

HUNT & TAWELL'S

ROOT PULPERS.

"Tiny" Root Pulper, Disc 21 inches diameter	£2 0 0
"Gem" Root Pulper	£2 10 0
Extra Discs ... ...each	£0 15 0
No. 0. Root Pulper, Disc 25 inches diameter. 4 knives...	£2 15 0
Cover 5/- extra.	
No. 1. Root Pulper, Disc 29 inches diameter. 4 knives...	£3 0 0
Cover 5/- extra.	
No. 2. Root Pulper, Disc 29 inches diameter. 6 knives...	£3 5 0
Cover 5/- extra.	
No. 3. Root Pulper, Disc 36 inches diameter. 6 knives...	£4 5 0
Cover 8/- extra.	
No. 4. Root Pulper, Disc 36 inches diameter. 8 knives...	£4 10 0
Cover 8/- extra.	

Pulleys extra according to size.

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BENTALL'S

BARREL ROOT PULPERS.

In these Machines the Knives are set round the Barrel in helical form; they are effectually prevented from choking by means of a worm, which rotates in front of the Barrel.

They pulp Cabbages very efficiently.

Mark.	Size of Barrel. Length Inches	Diam. Inches	No. of Handles.	Bushels per hour Hand Pr.	Tons per hour Horse Pr.	Tons per hour Steam Pr.	Legs.	Price.
RPD	10	9	1	7	—	—	Wood	£3 10 0
RPL	10	9	1	7	—	—	Wrot. Iron	£3 10 0
RPE	14	9	2	12	—	—	Wood	£4 10 0
RPM	14	9	2	12	—	—	Wrot. Iron	£4 10 0
RPC	10	12	2	10	—	—	Wood	£4 15 0
RPK	10	12	2	10	—	—	Wrot. Iron	£4 15 0
RPB	14	12	2	16	2	—	Wood	£5 5 0
RPI	14	12	2	16	2	—	Wrot. Iron	£5 5 0
RPA	20	12	2	—	3	4	Wood	£7 0 0
RPH	20	12	2	—	3	4	Wrot. Iron	£7 0 0

BENTALL'S

DISC ROOT PULPERS.

Mark.	Diam. of Disc. Inches.	No. of Knives.	No. of Handles.	Bushels per hour by Hand Power.	Price.
TPD	26	4	1	8	£2 15 0
TPN	30	4	1	12	£3 0 0
TPO	30	6	2	16	£3 5 0

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NICHOLSON'S

PERFORATED DISC ROOT PULPERS.

The Knives of these Machines are of the usual comb pattern, but the Discs are perforated so that each point of the Knife passes through a distinct hole, ensuring both clean and rapid cutting.

Mark.		
2N, with 96 Cutters and brass Bushes, suitable for two men or power	£5	0 0
1N, with 6 Knives, 78 Cutters, and whole iron Disc Guard	£3	12 6
0N, with 4 Knives, 52 Cutters, and whole Disc Iron Guard	£3	7 6
Ditto ditto with half Disc Iron Guard...	£3	5 0
N, with 4 Knives and quarter Disc Iron Guard...	£3	0 0

SMALL OCCUPATION DISC ROOT PULPERS.

The Discs of these Pulpers are fitted outside the Frame.

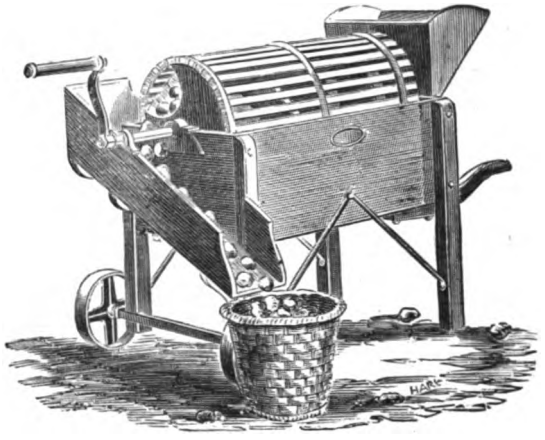
No. 1 Root Pulper, with 17 inch Disc	£1	12 0
No. 2 ditto 21 inch „	£2	2 0
No. 3 ditto 26 inch „	£2	10 0
No. 4 ditto 30 inch „	£3	0 0

Disc Guards can be had for the No. 1 at 5/- extra; No. 2, 6/-; No. 3, 7/6; No. 4, 10/- extra.

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CROSSKILL'S

ARCHIMEDEAN ROOT WASHERS.



The Cylindrical Cage contains an Archimedean Screw which propels the Roots out of the Cylinder without the necessity of lifting it out of the water when turned in one direction, but retains them and subjects them to a thorough cleansing while the handle is turned in the opposite direction.

Archimedean Root Washer, small size	£6	0	0
Ditto ditto middle size	£6	10	0
Ditto ditto large size	£8	0	0

RICHMOND & CHANDLER'S

ROOT WASHERS.

In these Machines a Cylindrical Cage supported in bearings, works in a water trough, to the sides of which a curved rack is attached which affords a ready means of raising and discharging the Roots when sufficiently washed.

No. 1 Root Washer	£4	15	0
No. 2 Root Washer	£5	5	0

Another form of Root Washer has the Cylindrical Cage divided into two equal parts, one of which may be detached and used to collect the materials. The Cage revolves in a trough in a manner similar to that previously described, but has to be lifted out by the operator.

No. 0 Root Washer, suitable for Hotels and large Establishments

Price... ... ... £3 0 0

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SACKS.

4 bushel Corn Sacks in bundles, best quality	each	£0	1	5
5 bushel ditto ditto	„	£0	1	8
5 bushel Flour Sacks in bundles...	„	£0	1	6
8 bushel Offal Sacks in bundles...	„	£0	1	3

These prices are subject to special quotations, as the value of sacking is continually varying.

SACK BARROWS.

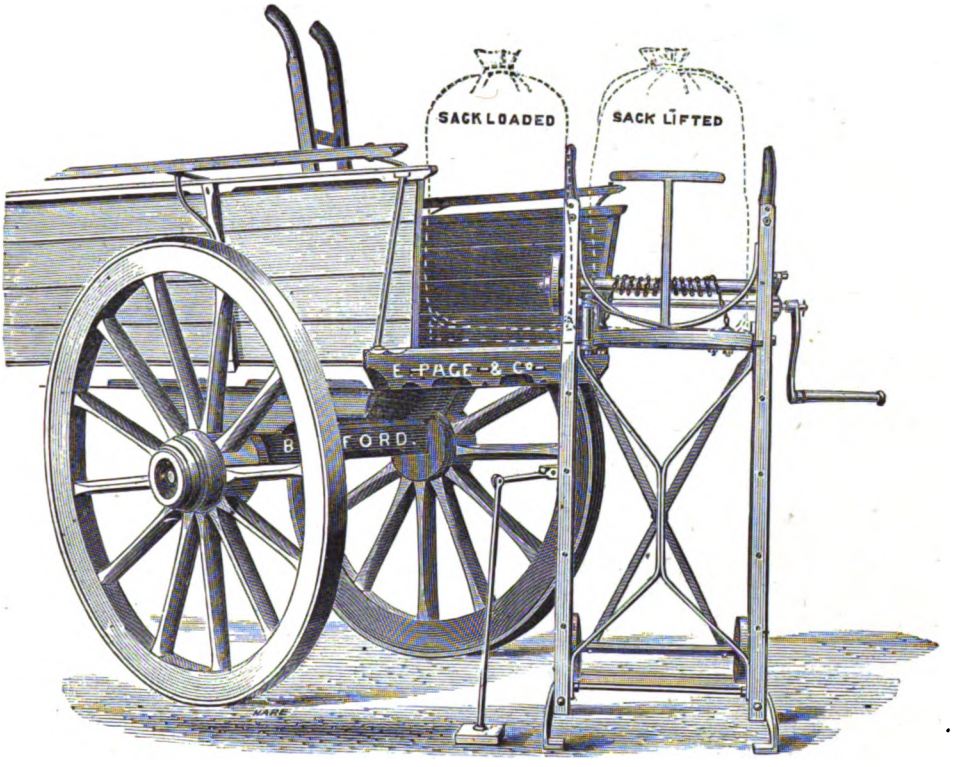
Farmers' Sack Barrow, wood	£0	11	6
Ditto ditto strong wood	£0	13	6
Millers' Sack Barrow, with Cross Handle	£1	4	0
Ditto ditto ditto with 14″ Wheels	£1	6	6
Grocers' Barrow, with wood Frame	£1	7	6
Ditto ditto ditto with 14″ Wheels	£1	10	0
Combined Sack Holder and Barrow	£1	10	0
No. 1 Wrought Iron Sack Barrow, 8″ Wheels, 2 Crossbars	£0	10	6
No. 2 Ditto ditto 8″ „ 3 „	£0	12	0
No. 3 Ditto ditto 10″ „ 3 „	£0	14	0
No. 4 Ditto ditto 10″ „ 4 „	£0	16	0
No. 5 Ditto ditto 12″ „ 4 „	£1	1	0
No. 6 Ditto ditto 15″ „ 4 „	£1	8	0

If with Grooved Wheels and India Rubber Tires, No. 1, 16/6 ; No. 2, 18/- ; No. 3, 20/6 ; No. 4, 23/- ; No. 5, 30/- ; No. 6, 41/6.

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LEWIS & SON'S

NEW PATENT CHAMPION SWING LOADER.



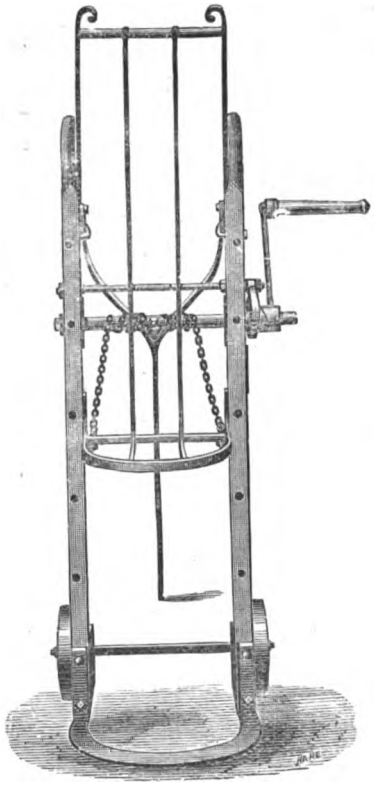
This Machine is an efficient Sack Lifter, Loader, Unloader, and Shooter. It is provided with a New Patent Swing Arrangement for loading, by means of which any kind of Bags, Bales, Barrels, or Sacks can be placed fairly in the cart or wagon by a youth by simply winding up the Machine. Three cwt. can be raised at one time.

New Champion Lifter, Swing Loader, and Unloader	£4	5	0
If fitted with Arrangements for Shooting ... ... extra	£0	10	6
Front Sack Holder ... ... extra	£0	7	6
No. 7 Combined Sack Lifter, Shooter, Loader, and Unloader, fitted with Gearing for easy lift, but without Swing Arrangement	£4	0	0
Front Sack Holder ... ... extra	£0	7	6

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LEWIS & SON'S

IMPROVED SACK LIFTERS.



With this Elevator one man can fill, lift, and carry a sack of corn with ease, thereby saving the labour of two men.

By means of a Self-acting Ratchet and Catch, the load will stand at any height without the least danger of falling.

In this very useful Implement some great improvements have recently been made by attaching swivels instead of links to each end of the chain and an eye at the top, which gives free action to the chain and entirely prevents twisting and breaking.

PRICES:—

No. 1, without Gearing £2 10 0

No. 2, with Gearing for easy lift £2 17 6

Sack Holder for either Machine, extra, 7/6.

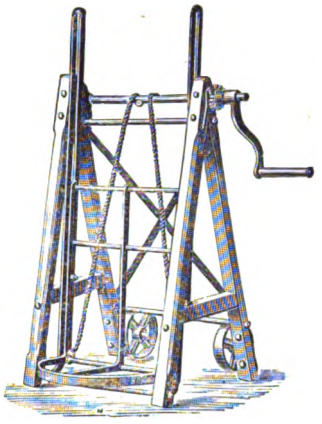
No. 3, Sack Lifter, Loader, and Unloader, fitted with Gearing and easy lift ... £3 10 0

If fitted with front Sack Holder, extra, 7/6.

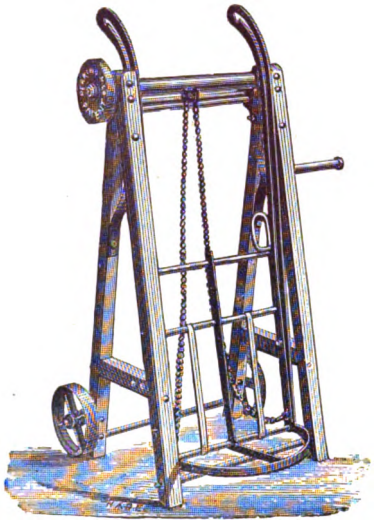
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PERKIN'S

PATENT A FRAME SACK LIFTER.



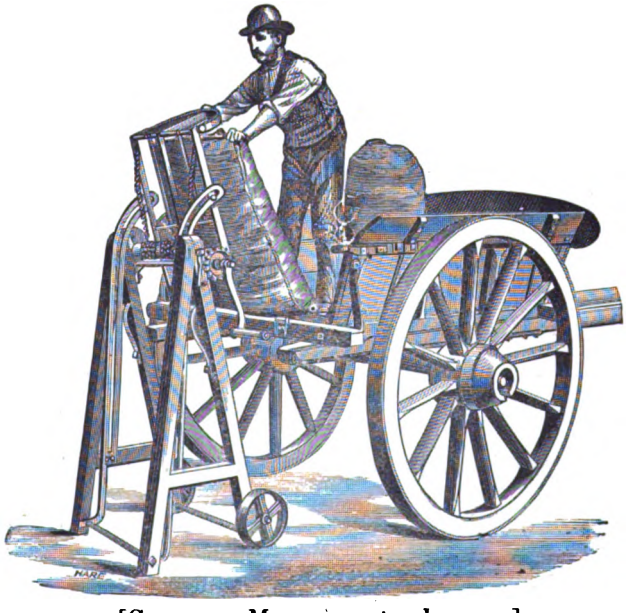
[SACK LIFTER *only*.]



[COMBINED MACHINE AS A LIFTER.]

The A Frame secures great stability with lightness and simplicity.

Sack Lifter *only*, new pattern, quick speed									£2	10	0
Combined Sack Lifter and Loader, new pattern, quick speed									£3	5	0
Ditto	ditto	original Machine							£4	4	0



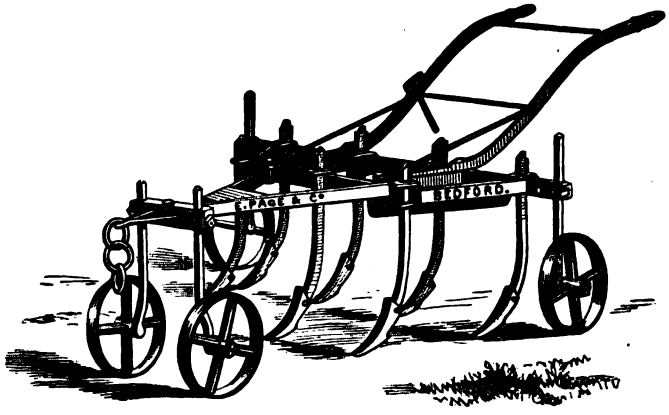
[COMBINED MACHINE AS A LOADER.]

Combined Sack Lifter, Loader, and Shooter, new pattern, quick speed									£3	17	6
Ditto	ditto	ditto	original Machine						£4	17	6

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PAGE'S

IMPROVED FOUR-WHEEL WROUGHT IRON LEVER SCARIFIERS.



These Implements are made of wrought iron, fitted with wrought iron Tines, so arranged that they can be moved nearer together or farther apart, or set deeper or shallower as required, and are well adapted for cleaning Wheat, Bean and Pea Stubbles, for Clover Ley, and for stirring tilth.

The Tines are readily lifted out of the ground at the land's end by simply pressing on the Handles which act as levers upon the inner Frame, to which the Tines are attached by means of wrought iron Clips.

The Implements are light but strong, and very steady in work.

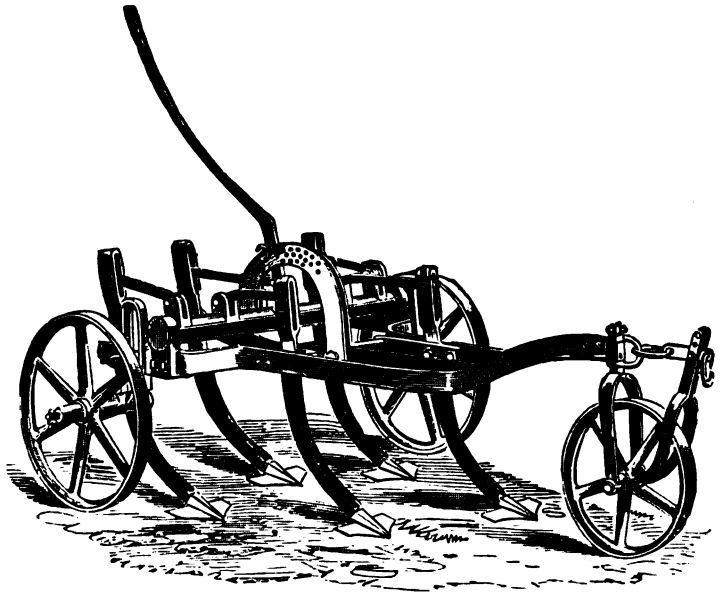
No. 5, with 5 wrought iron Tines, width of cut, 3 feet	£5	5	0
No. 7, with 7 wrought iron Tines, width of cut, 4 feet	£6	6	0
No. 9, with 9 wrought iron Tines, width of cut, 5 feet	£7	7	0
No. 11, with 11 wrought iron Tines, width of cut, 6 feet	£8	8	0

Cast iron Points for the above, 1½ inches wide, 6/- per dozen. Cast Iron Broad Shares, 9 inches wide, 10/- per dozen. Wrought iron Broad Feet, with Stems, 3/6 each.

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COLEMAN & MORTON'S

NEW PATENT CULTIVATORS.



These Cultivators are mounted on three or four Wheels; when a pair of wheels are used in front one of them is pinned to a steel Axle, while the other runs loose, thus preventing wear in the Wheel Bosses. All Cultivators are fitted with four wheels, unless otherwise ordered.

The Lever in the centre regulates the depth, and also takes the Prongs out of work at the land's end before turning.

The Prongs have two sets of three bolt holes; the top holes for very deep work, the middle holes for general work, and the bottom for paring in very dry, hard land.

Cast Iron Frames and Prongs.

No. 1, with 7 Prongs, width of cut, 4 feet 10 inches	£ 9 10 0
No. 2, with 5 Prongs, width of cut, 3 feet 6 inches	£ 7 10 0
No. 3, with 7 Prongs and Side Levers, width of cut, 4 feet 10 inches	£11 0 0
No. 4, with 5 Prongs and Side Levers, width of cut, 3 feet 6 inches	£ 8 5 0
No. 5A, with 5 wrought Prongs and cast iron Frame, width of cut, 3 feet 6 inches	£ 6 15 0

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COLEMAN & MORTON'S
NEW PATENT CULTIVATORS
(CONTINUED).

Prices of Cultivators with Wrought Iron Frames and Prongs.

		Width of Cut. ft.	in.		
No. 15,	with 5 Prongs, light...	2	8	...	£ 6 10 0
No. 5B,	with 5 Prongs, light...	3	6	...	£ 7 0 0
No. 5,	with 5 Prongs, medium	3	6	...	£ 8 0 0
No. 6,	with 5 Prongs, very strong	3	6	...	£ 8 15 0
No. 7,	with 5 Prongs and Side Levers	3	6	...	£10 0 0
No. 8B,	with 7 Prongs, for light land	5	0	...	£10 10 0
No. 8C,	with 9 Prongs, for light land	5	0	...	£11 10 0
No. 8,	with 7 Prongs, very strong	5	0	...	£11 10 0
No. 9,	with 7 Prongs and Side Levers	5	0	...	£14 0 0
No. 12,	with 9 Prongs and Side Levers, adapted for an 8-furrow stetch			...	£17 0 0

Prices of Cultivators with Wrought Iron Frames and Prongs to cut behind the Wheels.

No. 7A,	with 5 Prongs and Side Levers...	3	6	...	£11 0 0
No. 9A.,	with 7 Prongs and Side Levers	5	0	...	£15 10 0

CULTIVATOR SHARES.

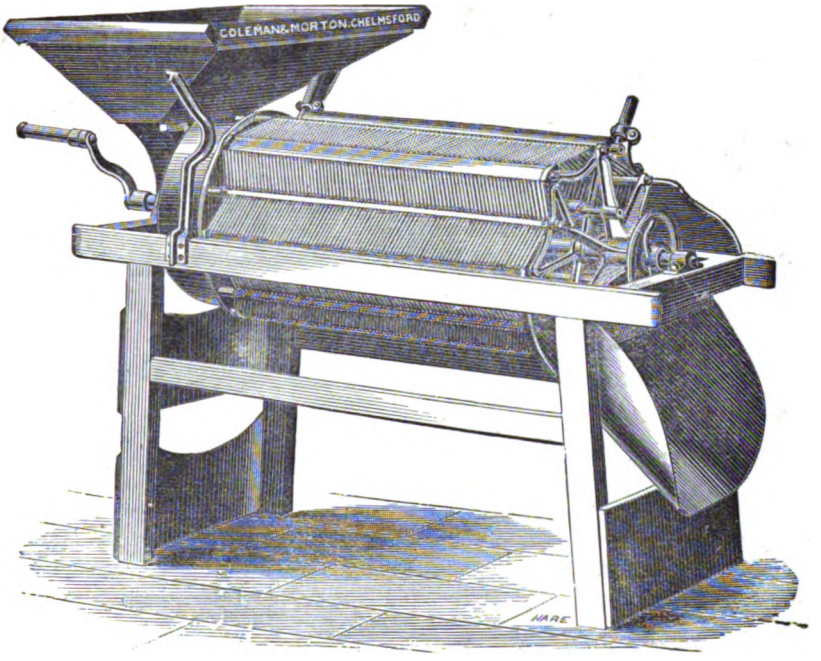
		Width.			s.	d.
Shares,	No. 1,	10	inches, for hard, dry land	per dozen	8	6
,,	No. 2,	10	inches, for wet and foul land	,,	9	0
,,	No. 2A,	8	inches, ditto	,,	8	0
,,	No. 3,	12	inches, for hard, dry land	,,	10	6
,,	No. 4,	12	inches, for wet, foul land	,,	10	6
,,	No. 5,	6	inches, ditto	,,	6	6
Spud Points,	No. 6,	2½	inches, for breaking up and cleaning... ...	,,	6	0
Shares,	No. 7,	15	inches for hard, dry land	,,	14	0
Points,	No. 8,	—	for breaking up and cleaning	,,	5	6
Shares,	No. 9,	6	inches for hard, dry land	,,	7	6
,,	No. 10,	6	inches double-breasted or winged Shares ...	,,	9	0
,,	No. 11,	7	inches ditto ditto ...	,,	10	0
,,	No. 12,	10	inches ditto ditto ...	,,	14	0

Steel Shares, 6 inches wide, 2/9 each; 10 inches wide, 3/6 each. Cast iron Prongs, 4/6 each.
Wrought iron Prongs, 2″ by 1″, 6/- each; 2¼″ by 1″, 7/- each; 2½″ by 1″, 8/- each.

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COLEMAN & MORTON'S

PATENT ADJUSTABLE ROTARY SEED SEPARATOR AND CORN SCREEN.



This Screen has great range of adjustability, and is adapted to all seeds from Wheat to Turnip or Clover.

The Angular Wires being made in short lengths and not continuous, one or more can be taken out and replaced without trouble.

The screening parts are made of steel, and are as rigid as if they were not at all adjustable.

Price of Adjustable Rotary Screen and Seed Separator	£13	13	0
Ditto ditto with Stone Separator	£14	14	0
Ditto ditto if fitted with Blower	£20	0	0

Quantity screened per hour, from 60 to 80 bushels.

Screens for Coffee are constructed on the same principle.

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CLARKE'S PATENT SCYTHES.

The Handle or Sneath of these Scythes is made of tubular iron; the Blade is capable of adjustment to the greatest nicety to suit the height of the Mower and the nature of the crop, and is fixed into the Handle by means of a slot and wedge, which makes a most rigid joint.

The Scythes are light and handy, well adapted for Lawn mowing; they are also sufficiently strong to cut heavy crops of Grass, Clover, Barley, &c.

Being fitted by machinery, the trouble of hanging and re-hanging Blades is dispensed with.

PRICES:—

No. 1 Lawn Scythe, with Patent Adjustable Handle or Sneath, with 36 inch Patent Cast Steel Blade, Spanner and Wedges complete £0 10 6

No. 2 Meadow Grass Scythe, with Patent Adjustable Handle or Sneath, with 40 to 42 inch best Crown Blade, Spanner and Wedges complete £0 10 6

Extra Blades £0 4 6

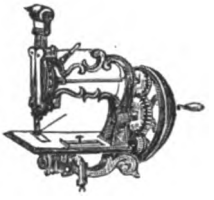
Cradles for gathering Corn £0 3 0

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WEIR'S
SEWING MACHINES.

"THE GLOBE,"

FOR DRESSMAKING AND HOUSEHOLD WORK.



Can be worked on any table with or without fixing.

Price, with Tucking Guide, Clamp, set of four Needles, Screw-driver, Oil Can, and Book of Directions for Use £2 2 0

"THE ARGUS," New Shuttle Lock-Stitch Machine.

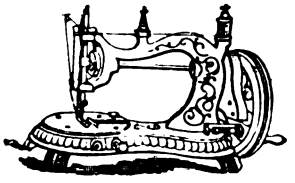
SUITABLE FOR FAMILY AND DRESSMAKERS' USE.

This Machine will Hem, Fell, Seam, Bind, Tuck, Quilt, Gather, Braid, Cord, and Embroider.

It is fitted with a Patent Loose Wheel, by means of which the Bobbins can be wound without setting the other parts of the Machine in motion.

Price, with accessories complete £2 15 0
Treadle, extra £1 0 0

"THE COMET." Lock-Stitch (Shuttle) Machine.



Makes a Lock-stitch alike on both sides.

Price, with accessories complete £3 3 0
Treadle, extra £1 0 0

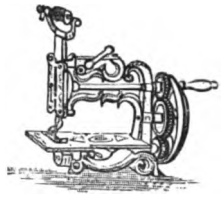
TWISTED LOOP-STITCH SEWING MACHINE.

Price, with accessories complete £2 15 0
Treadle, extra £1 0 0

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SEWING MACHINES.

Weir's 55s. Sewing Machine for Families.



Hems, Fells, Seams, Binds, Braids, Quilts, Gathers, Tucks, and Embroiders. It is fitted with Spiral Gears, which work very smoothly and silently, and has an intermedial Tension which is very easily regulated.

Price, with accessories, including narrow Hem-folder, Work Guide, Clamp, set of four Needles, Screw-driver, Oil Tin, and Illustrated Book of Directions	£2	15	0
Polished Mahogany Cabinet for ditto	£0	8	0

The "Little Howe" Lock-Stitch Hand Shuttle Machine

Will make every kind of Wearing Apparel. It is equal to the best Treadle Machine in Size, power, and finish, and will do the same description and quality of work.

Price, complete with Silver-plated Double Hemmer, Guide and Screw, Six Needles, Three Reels, Screw-driver, Oil Can, Instruction Book, and Portable Box, with Handle	£4	4	0
Stand, with Treadle, extra	£1	10	0

The "Swiftsure" Hand Lock-Stitch Shuttle Machine

Will Hem, Fell, Gather, Braid, Bind, Quilt, Tuck, and Sew from the finest Linen to the stoutest Cloth.

Price, complete, including Silver-plated Double Hemmer, Guide and Screw, six Needles, three Reels, complete set of Tools, and Portable Box with Handle	£4	4	0
Stand, with Treadle, extra	£1	10	0

Improved "Speedwell" Single Thread Machine,

"Willcox & Gibbs" Principle.

Price, with two Hemmers, Quilter, Needle Wrench, Guide with Thumb Screw, six Needles, Screw-driver, Oil Can, Instruction Book, and Box...	£3	3	0
On Stand as a Treadle Machine complete	£4	10	0

Shuttle "Express" Hand Sewing Machine.

Price, with extras, very complete	£3	3	0

This Machine does not work while the Bobbin is being wound, reducing wear and tear very considerably.

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HOWE TREADLE SEWING MACHINES.

Mark A, for Dressmaking, Domestic, and Light Manufacturing Purposes ...	£ 6 6 0
„ B, with Wheel Feed and vibrating Presser, for light Boot Work of all descriptions, including Flowering	£ 7 0 0
„ B, with "Drop" or "Four Motion" Feed, for light Tailoring Purposes	£ 7 0 0
„ C, with Wheel Feed, for heavy Boot Work of all descriptions	£ 7 10 0
„ C, with "Drop" or "Four Motion" Feed, for heavy Tailoring Purposes	£ 8 0 0
The "Elastic" or Universal Feed Machine ... ... No. 1	£ 9 0 0
Ditto ditto ditto ... ... No. 2	£10 10 0

HOWE SEWING MACHINES.

"Wheeler & Wilson" Principle.

These Machines are full-sized, complete, with Table, Stand, and following extras, viz. :— Quilting and Tucking Guides, Steel Hemmer, Braiding Crystal, Slide for Cloth Plate, 12 Needles, three Bobbins, Needle and large Wrenches, Screw-driver, Oil Tin and Oil Can, Emery Stone, and Thread Hook.

Ornamental Bronze Machine complete	£5 5 0
Silver-plated Silent Feed Machine complete	£7 10 0

Polished Quarter-Case Cabinet Machines.

Ornamental Bronze Silent Feed, complete	£6 6 0
Silver-plated Silent Feed Machine, complete	£8 10 0

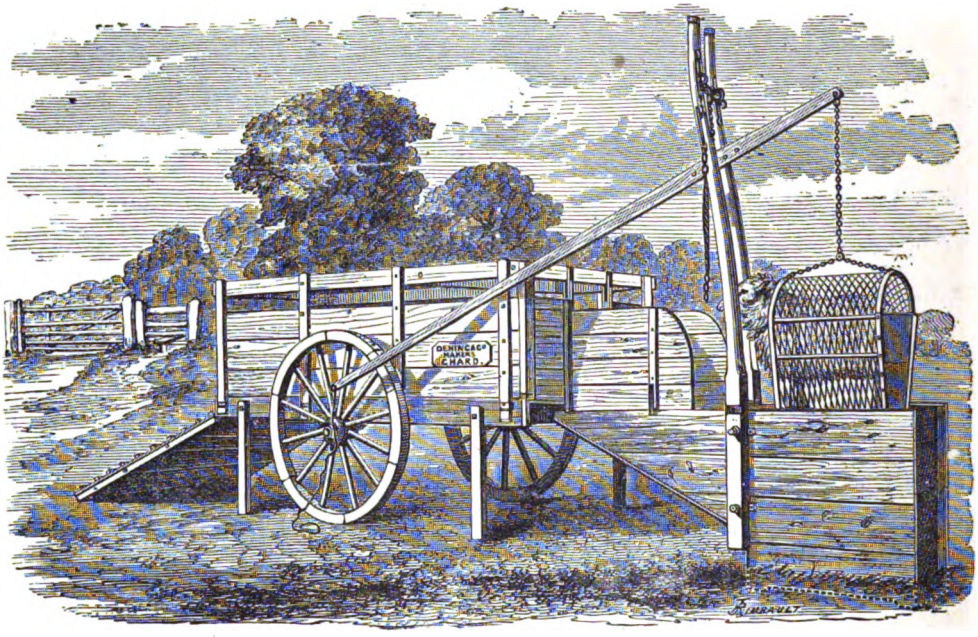
Polished Half-Case Cabinet Machines.

Ornamental Bronze Silent Feed Machine, complete	£6 15 0
Silver-plated Silent Feed Machine, complete	£9 0 0

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DENING'S

NEW AND IMPROVED SHEEP DIPPING APPARATUS.



With this Machine two men or one man and a boy can dip from one thousand to two thousand Sheep per day of 12 hours.

Sixteen Sheep can be draining at one time, and none of the liquor is wasted, but all returns to the tank.

The Sheep are kept standing in a free position during the whole of the operation, and are dipped by means of a Cage worked by a simple lever arrangement.

The Apparatus is mounted on Wheels and fitted with Shafts so as to be easily removed from place to place.

Price of complete Apparatus, consisting of Lift, Dipping Cage, Tank, Draining Cart, Wheels and Shafts	£30	0	0
Ditto on Four Wheels, with Locking Gear...	£35	0	0
Tank only	£ 5	0	0
Cage only	£ 5	0	0

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CORBETT'S

COMBINED SHEEP RACK AND TROUGH.

These Sheep Racks are mounted on Four Strong Iron Disc Wheels, with a spread of nearly three feet, which prevents the Racks being blown over in windy weather.

The Iron Bars forming the Rack are made to run in straight lines diagonally from top to bottom, and are sufficiently close to prevent the sheep drawing out the hay faster than they can consume it.

The Trough is two feet wide, made with slanting sides, so that the corn falls to the centre, and prevents any accumulation of decayed food in the angles.

The Upright Bars are made of round iron which materially strengthen the Rack and prevent loss of wool by rubbing.

The Rack is covered with a strong Wood Roof, guttered to carry off the rain, and is fitted with a door the full length of the top to admit the food.

The Roof overhangs sufficiently to keep the food perfectly dry.

A1	Combined Rack and Trough for		24	Sheep	£4 0 0
A2	do.	do.	20	,,	£3 15 0
A3	do.	do.	18	,,	£3 10 0
A4	do.	do.	14	,,	£3 5 0

ALBION COMBINED SHEEP RACK AND TROUGH.

In these Racks the Bars are curved to prevent the hay being drawn out by the sheep faster than they can consume it.

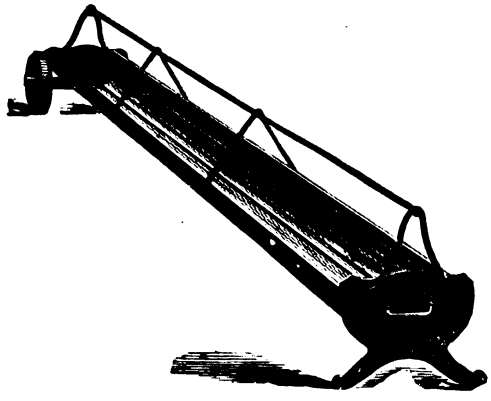
The Wheels are placed under the Trough out of the way of the sheep and well protected from dirt.

No. 1	Combined Rack and Trough for		14	Sheep	£3 7 6
No. 2	do.	do.	18	,,	£3 12 6
No. 3	do.	do.	24	,,	£4 0 0

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PAGE'S

PATENT GALVANIZED CORRUGATED SHEEP TROUGHS.



These Troughs combine all the requirements for a good serviceable article, being strong, light, and durable. They are constructed principally of Corrugated Sheet Iron, galvanized to prevent rust; and wrought Cross Bars, Rails, and Handle.

The Corrugations not only strengthen the Troughs very materially, but also effectually prevent any waste of food.

Trough, 6 feet long, 14 inches wide, with two Cross Bars	£0 15 0
Trough, 8 feet long, 14 inches wide, with two Cross Bars	£1 0 0
Trough, 10 feet long, 14 inches wide	£1 4 0

Top Rail and Handles 3/6 extra. If mounted on Wheels, 5/- extra.

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FISON'S

ROYAL AGRICULTURAL SOCIETY OF ENGLAND'S FIRST PRIZE MOVEABLE HUTS.

SIZES OF HUTS.

No. 1. Body 7ft. by 4ft. 6in., height 6ft. 6in. ... ... Price £ 9 0 0

Dimensions :—Sills 4½in. by 3in.; Frame 2½in. by 2in.; Axle Beds 5in. by 4in.; Wheels 18in. diameter. Single Boarded, Ventilator, without Fore-Carriage, drawn by Trace Chains.

Extras :—Cupboard and Washbowl ... ... £ 0 15 0
Stove, Pipes, &c... ... ... £ 1 5 0

Price complete £11 0 0

No. 2. Body 8ft. by 5ft., height 6ft. 9in. ... ... Price £12 0 0

Dimensions :—Similar to No. 1. Single Boarded, Ventilator, without Fore-Carriage, drawn by Trace Chains.

Extras :—Cupboard and Washbowl ... ... £ 0 15 0
Stove, Pipes, &c.... ... ... £ 1 5 0

Price complete £14 0 0

No. 3. Body 9ft. by 6ft., height 7ft. ... ... Price £15 0 0

Dimensions :—Sills 4½in. by 4in.; Frame 4in. by 3in.; Axle Beds 5in. by 5in.; Wheels 2ft. diameter. Double Boarded, Ventilator, Window and Shutter, without Fore-Carriage, drawn by Trace Chains.

Extras :—Carriage, complete ... ... £ 4 0 0
Stove, Pipes, &c.... ... ... £ 1 5 0
Moveable Bed, Lamb Pen, &c. ... ... £ 1 5 0
Cupboard and Washbowl ... ... £ 0 15 0
Mattress ... ... £ 0 9 0

Price complete £22 14 0

No. 4. Body 10ft. by 6ft. 6in., height 7ft. 4in. ... ... Price £22 0 0

Dimensions of Frame :—Axle and Wheels similar to No. 3; fitted with Fore Carriage, Double Boarded Ventilator, Window and Shutter, and Moveable Table, drawn by Shafts or Coupling, to order.

Extras :—Stove, Pipes, &c. ... ... £ 1 5 0
Cupboard and Washbowl ... ... £ 0 15 0
Moveable Bed and Lamb Pen ... ... £ 1 5 0
Mattress ... ... £ 0 9 0

Price complete £25 14 0

No. 5. Special—a Superior Sleeping Van, dimensions similar to the No. 4 Hut. Mounted on Springs, fitted with Cooking Apparatus, and every convenience necessary for ordinary use; especially adapted for Export.

Price complete £67 0 0

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LONDON AND COUNTRY SHOVELS.

(Best Warranted.)

	Width.	Length.			
No. 000.	8 inches	by 10½ inches	per dozen	£1	7 0
No. 00.	8½ inches	by 11 inches	„	£1	8 0
No. 0.	9 inches	by 11½ inches	„	£1	9 0
No. 1.	9½ inches	by 12 inches	„	£1	10 0
No. 2.	10 inches	by 12½ inches	„	£1	12 0
No. 3.	10½ inches	by 13 inches	„	£1	14 0
No. 4.	11 inches	by 13½ inches	„	£1	16 0
No. 5.	11½ inches	by 14 inches	„	£1	18 0
No. 6.	12 inches	by 14½ inches	„	£2	1 0
No. 7.	12½ inches	by 15 inches	„	£2	4 0
No. 8.	13 inches	by 15½ inches	„	£2	7 0
No. 9.	13½ inches	by 16 inches	„	£2	10 0

Treaded 2/- extra. Long Straps 2/- extra. Side Straps 2/- extra. Rivetted Eyes 2/- extra.
Extra strong 2/- extra.

NORFOLK SPADE SHOVELS.

	Width.	Length.			
No. 1.	9 inches	by 12 inches	per dozen	£1	16 0
No. 2.	9¾ inches	by 12½ inches	„	£1	18 0
No. 3.	10 inches	by 13 inches	„	£2	0 0

SUTTON SHOVELS.

	Width.	Length.			
No. 0.	9½ inches	by 12 inches	per dozen	£1	12 0
No. 1.	10 inches	by 12½ inches	„	£1	14 0
No. 2.	10½ inches	by 13 inches	„	£1	16 0
No. 3.	11 inches	by 13½ inches	„	£1	18 0

STAFFORDSHIRE TAPERED SHOVELS.

	Width. Top.	Bottom.	Length.			
No. 0.	9½ inches	by 8 inches	by 11½ inches	per dozen	£1	9 0
No. 1.	10 inches	by 8½ inches	by 12 inches	„	£1	10 0
No. 2.	10½ inches	by 9 inches	by 12½ inches	„	£1	12 0
No. 3.	11 inches	by 9½ inches	by 13 inches	„	£1	14 0
No. 4.	11½ inches	by 10 inches	by 13½ inches	„	£1	16 0

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CAMBRIDGE SHOVELS.

	Width	Length.		
No. 000.	8¼ inches	by 10½ inches	per dozen	£1 7 0
No. 00.	8¾ inches	by 11 inches	„	£1 8 0
No. 0.	9 inches	by 11⅛ inches	„	£1 9 0

NORFOLK SHOVELS.

	Width.	Length.		
No. 0.	9 inches	by 12 inches	per dozen	£1 16 0
No. 1.	9¼ inches	by 12½ inches	„	£1 18 0
No. 2.	10 inches	by 13 inches	„	£2 0 0

CHESHIRE SHOVELS.

	Width,	Length.		Langet.	Socket.
No. 1.	9½ inches	by 12 inches	per dozen	£2 5 0	£2 3 0
No. 2.	10 inches	by 12½ inches	„	£2 6 0	£2 4 0
No. 3.	10½ inches	by 13 inches	„	£2 8 0	£2 6 0
No. 4.	11 inches	by 13½ inches	„	£2 10 0	£2 8 0
No. 5.	11½ inches	by 14 inches	„	£2 12 0	£2 10 0
No. 6.	12 inches	by 14½ inches	„	£2 15 0	£2 13 0
No. 7.	12½ inches	by 15 inches	„	£2 17 0	£2 15 0
No. 8.	13 inches	by 15½ inches	„	£3 0 0	£2 17 0
No. 9.	13½ inches	by 16 inches	„	£3 2 0	£3 0 0

CORN SHOVELS.

Width.				
Top.	Bottom.	Length.		
10½ inches	by 13 inches	by 15½ inches	per dozen	£2 2 0

CHESHIRE LANGET CORN SHOVELS.

Width.				
Top.	Bottom.	Length.		
10½ inches	by 13 inches	by 15½ inches	per dozen	£2 12 0

IMPROVED CORN SHOVELS.

Width.				
Top.	Bottom.	Length.		
9 inches	by 12 inches	by 15 inches	per dozen	£2 2 0

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CAST STEEL LONDON AND COUNTRY SHOVELS.

	Width.	Length.		
No. 0.	9 inches by	11½ inches	per dozen	£1 12 0
No. 1.	9½ inches by	12 inches	„	£1 13 0
No. 2.	10 inches by	12½ inches	„	£1 16 0
No. 3.	10½ inches by	13 inches	„	£1 19 0
No. 4.	11 inches by	13½ inches	„	£2 2 0

Long Strapped, per dozen, 2/- extra. Side Strapped, per dozen, 2/- extra. Rivetted Eyes, per dozen, 2/- extra. Treaded, per dozen, 2/- extra.

CAST STEEL STAFFORDSHIRE TAPERED SHOVELS.

	Top.	Bottom.	Length.		
No. 0.	9½ inches by	8 inches by	11½ inches...	per dozen	£1 12 0
No. 1.	10 inches by	8½ inches by	12 inches...	„	£1 13 0
No. 2.	10½ inches by	9 inches by	12½ inches...	„	£1 16 0
No. 3.	11 inches by	9½ inches by	13 inches...	„	£1 19 0
No. 4.	11½ inches by	10 inches by	13½ inches...	„	£2 2 0

CAST STEEL SUTTON SHOVELS.

	Width.	Length.		
No. 0.	9½ inches by	12 inches	per dozen	£1 15 0
No. 1.	10 inches by	12½ inches	„	£1 16 0
No. 2.	10½ inches by	13 inches	„	£1 19 0
No. 3.	11 inches by	13½ inches	„	£2 2 0
No. 4.	11½ inches by	14 inches	„	£2 5 0

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CAST STEEL SPADES (WARRANTED).

London and Country Cast Steel Spades.

No. 0. 7 inches wide by 10¾ inches long..	per dozen	£1	12 0
No. 1. 7½ inches wide by 11½ inches long	„	£1	13 0
No. 2. 7¾ inches wide by 12 inches long...	„	£1	16 0
No. 3. 8¼ inches wide by 12½ inches long	„	£1	19 0
No. 4. 8¾ inches wide by 13¼ inches long	„	£2	2 0
No. 5. 9 inches wide by 14 inches long	„	£2	9 0

Long Straps, per dozen, 2/- extra. Rivetted Eyes, per dozen, 2/- extra. Side Straps, per dozen, 2/-, extra. Ribbed, per dozen, 2/- extra.

CAST STEEL CHESHIRE SPADES.

		Socket.			Langet.		
No. 00. 6¾ inches wide by 10¼ inches long	per dozen	£2	1	0	£2	3	0
No. 0. 7 inches wide by 10¾ inches long	„	£2	3	0	£2	5	0
No. 1. 7½ inches wide by 11½ inches long	„	£2	5	0	£2	7	0
No. 2. 7¾ inches wide by 12 inches long	„	£2	8	0	£2	10	0
No. 3. 8¼ inches wide by 12½ inches long	„	£2	11	0	£2	13	0
No. 4. 8¾ inches wide by 13¼ inches long	„	£2	14	0	£2	16	0

ORME'S PATENT THICK TOP SPADES.

No. 0. 7 inches wide by 10¾ inches long	per dozen	£1	16 0
No. 1. 7½ inches wide by 11½ inches long	„	£1	17 0
No. 2. 8 inches wide by 12 inches long	„	£2	0 0
No. 3. 8½ inches wide by 12½ inches long	„	£2	3 0
No. 4. 9 inches wide by 13 inches long	„	£2	6 0

Rivetted Eyes, per dozen, 2/- extra.

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BEST WARRANTED SCOTCH STRAIGHT SPADES.

No. 1.	7½ inches wide by 11½ inches long	...	...	...	...	...	per dozen	£1	16	0
No. 2.	7¾ inches wide by 12 inches long	...	...	...	...	...	,,	£1	18	0
No. 3.	8¼ inches wide by 12½ inches long	..	...	...	...	...	,,	£2	0	0
No. 4.	8¾ inches wide by 13 inches long	...	...	...	...	..	,,	£2	2	0
No. 5.	9 inches wide by 13½ inches long	...	...	..	...	...	,,	£2	4	0

BEST WARRANTED STAFFORDSHIRE TAPERED SPADES.

	Width. Top.	Bottom.	Length.							
No. 0.	9½ inches by	8 inches by	11½ inches	...	...	...	...	per dozen	£1	9	0
No. 1.	10 inches by	8½ inches by	12 inches	...	...	...	...	,,	£1	10	0
No. 2.	10½ inches by	9 inches by	12½ inches	...	...	...	...	,,	£1	12	0
No. 3.	11 inches by	9½ inches by	13 inches	...	...	...	...	,,	£1	14	0
No. 4.	11½ inches by	10 inches by	13½ inches	...	...	...	...	,,	£1	16	0
No. 5.	12 inches by	10½ inches by	14 inches	...	...	...	...	,,	£1	18	0
No. 6.	12½ inches by	11 inches by	14½ inches	...	...	...	...	,,	£2	0	0

BEST WARRANTED WILTSHIRE SPADES.

	Width. Top.	Bottom.	Length.							
No. 000.	6¼ inches by	6¾ inches by	9¾ inches	...	...	...	...	per dozen	£1	7	0
No. 00.	6½ inches by	7 inches by	10¼ inches	...	...	...	...	,,	£1	8	0
No. 0.	6¾ inches by	7¼ inches by	10½ inches	...	...	...	...	,,	£1	9	0
No. 1.	7 inches by	7½ inches by	11 inches	...	...	...	...	,,	£1	10	0

NORFOLK SPADES (BRIGHT).

No. 1.	8 inches wide by 12 inches long	...	...	...	...	..	per dozen	£1	18	0
No. 2.	8½ inches wide by 12½ inches long	...	...	...	...	...	,,	£2	0	0
No. 3.	9 inches wide by 13 inches long	...	...	...	...	...	,,	£2	2	0

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BEST WARRANTED LONDON AND COUNTRY SPADES.

No. 000.	6½ inches wide by 8¾ inches long	per dozen	£1 7 0
No. 00.	6¾ inches wide by 10¼ inches long	,,	£1 8 0
No. 0.	7 inches wide by 10¾ inches long	,,	£1 9 0
No. 1.	7½ inches wide by 11½ inches long	,,	£1 10 0
No. 2.	7¾ inches wide by 12 inches long	,,	£1 12 0
No. 3.	8¼ inches wide by 12½ inches long	,,	£1 14 0
No. 4.	8¾ inches wide by 13¼ inches long	,,	£1 16 0
No. 5.	9 inches wide by 14 inches long	,,	£1 18 0
No. 6.	9¼ inches wide by 14½ inches long	,,	£2 1 0

Long Strap, per dozen, 2/- extra. Strap Treaded, per dozen, 2/- extra. Ribbed, per dozen, 2/- extra
Rivetted Eyes, per dozen, 2/- extra. Extra Strong, per dozen, 2/- extra. Bright, per dozen, 4/- extra.
Half Bright, per dozen, 2/- extra.

BEST WARRANTED GLOUCESTER SPADES.

No. 0.	7 inches wide by 10¾ inches long	per dozen	£1 11 0
No. 1.	7½ inches wide by 11 inches long	,,	£1 12 0
No. 2.	8 inches wide by 11½ inches long	,,	£1 14 0
No. 3.	8½ inches wide by 12 inches long	,,	£1 16 0

CHESHIRE SPADES.

			Socket.	Langet
No. 00.	6¾ inches wide by 10¼ inches long	per dozen	£1 18 0	£2 0 0
No. 0.	7 inches wide by 10¾ inches long	,,	£2 0 0	£2 2 0
No. 1.	7½ inches wide by 11½ inches long	,,	£2 2 0	£2 4 0
No. 2.	7¾ inches wide by 12 inches long	,,	£2 4 0	£2 6 0
No. 3.	8¼ inches wide by 12½ inches long	,,	£2 6 0	£2 8 0
No. 4.	8¾ inches wide by 13¼ inches long	,,	£2 8 0	£2 10 0
No. 5.	9 inches wide by 14 inches long	,,	£2 10 0	£2 12 0

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DRAINING TOOLS.

4 Rivets in Straps.

Top.	Bottom.	Length.		Best Warranted.	Cast Steel
6 inches by	4½ inches by	16 inches	per dozen	£2 4 0	£2 10 0
6 inches by	4⅛ inches by	18 inches	„	£2 6 0	£2 12 0
6 inches by	4 inches by	20 inches	„	£2 8 0	£2 14 0

Steel Tops, per dozen, 2/- extra.

DRAINING TOOLS.

3 Rivets in Straps.

Top.	Bottom.	Length.		Best Warranted.	Cast Steel.
6 inches by	3⅛ inches by	17 inches	per dozen	£2 2 0	£2 8 0
6 inches by	3½ inches by	18 inches	„	£2 4 0	£2 10 0
6 inches by	3⅞ inches by	19 inches	„	£2 6 0	£2 12 0

Extra Rivets, per dozen, 2/- extra. Steel Tops, per dozen, 2/- extra. Rivetted Eyes, per dozen 2/- extra.

CLAY SPADES.

	Top.	Bottom.	Length.		Best Warranted.	Cast Steel.
No. 00.	4¾ inches by	5⅛ inches by	12 inches... ...	per dozen	£1 10 0	£1 13 0
No. 0.	5¼ inches by	6 inches by	12¼ inches... ...	„	£1 11 0	£1 14 0
No. 1.	5¾ inches by	6⅛ inches by	13 inches... ...	„	£1 12 0	£1 15 0
No. 2.	6¼ inches by	7 inches by	13⅛ inches... ...	„	£1 14 0	£1 18 0

GRAFTING TOOLS.

Long Strap, 3 Rivets.

	Top.	Bottom.	Length.		Best Warranted.	Cast Steel.
No. 1.	5¾ inches by	6¼ inches by	12 inches	per dozen	£1 14 0	£1 17 0
No. 2.	6 inches by	6½ inches by	13 inches	„	£1 16 0	£2 0 0
No. 3.	6¼ inches by	6¾ inches by	14 inches	„	£1 18 0	£2 3 0

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BEST WARRANTED EXTRA LEATHERED AND DOUBLE NAILED LONG BELLOWS,

Ordinary Shape.

Width in inches	16	18	20	22	24	26	28	30
Price per pair	28/-	32/-	38/-	46/-	54/-	65/-	76/-	92/-

Width in inches	32	34	36	38	40	42
Price per pair	110/-	137/-	176/-	220/-	276/-	300/-

PATENT DOUBLE BLAST CIRCULAR BELLOWS,

Mounted in Iron Frame, complete.

Width in inches	18	20	22	24	26	28
Price per pair	115/-	132/-	154/-	176/-	198/-	230/-

Width in inches	30	32	34	36	38	40
Price per pair	268/-	300/-	357/-	400/-	455/-	520/-

These Bellows stand in half the space of the ordinary long Bellows, and every stroke of the handle or lever produces twice as much air and force of blast.

The iron or steel is thus fused in two-thirds of the usual time, and a considerable saving effected in fuel.

SINGLE BLAST CIRCULAR BELLOWS,

Mounted in Iron or Wood Frames.

Width in inches	16	18	20	22	24	26
Price per pair	42/-	50/-	60/-	70/-	82/-	100/-
Iron or Wood Frames	34/-	35/-	36/-	37/-	38/-	39/-

Width in inches	28	30	32	34	36	38	40
Price per pair	122/-	140/-	164/-	194/-	226/-	270/-	310/-
Iron or Wood Frames	40/-	41/-	42/-	43/-	44/-	45/-	46/-

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SMITH'S FORGES (PORTABLE).

These Forges occupy little space, and avoid the expense of building and fitting up stationary Hearths.

Circular Hearths.		Circular Bellows.	
22 inches diameter, fitted with Hoods,		18 inches diameter	£ 6 10 0
24 inches „ „ „		20 inches „	£ 7 5 0
26 inches „ „ „		22 inches „	£ 8 4 0
28 inches „ „ „		24 inches „	£ 9 5 0
30 inches „ „ „		26 inches „	£10 6 0

Size of Hearth.		Circular Bellows.	
2ft. 2in. long by 1ft. 10in. wide,	fitted with Hoods,	22 inches diameter	£ 9 5 0
2ft. 5in. „ 2ft. 0in. „	„	24 inches „	£10 6 0
2ft. 9in. „ 2ft. 3in. „	„	26 inches „	£11 7 0
2ft. 10in. „ 2ft. 6in. „	„	28 inches „	£12 15 0

PORTABLE FORGES.

Fitted with Ordinary Long Shaped Bellows.

Portable Forge 01,	with 18 inch, Long Shaped Bellows		£4 10 0
Do. do. 02, „	20 inch „	„	£5 0 0
Do. do. 03, „	22 inch „	„	£6 5 0
Do. do. 04, „	24 inch „	„	£7 10 0
Do. do. 05, „	26 inch „	„	£9 10 0

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HINDLEY'S

VERTICAL STEAM BOILERS,

With all Mountings complete.

These Boilers are made in the best manner, of best Staffordshire Plates, with **Vertical Tubes**, which give a much larger Heating Surface than Cross Tubes, and also produce dryer steam.

The Vertical Tubes can be easily replaced, when required, in a few hours.

Cross Tubes last longer than Vertical Tubes, but they are more difficult and more expensive to renew.

Vertical Tube Boilers are economical in fuel and will outlast several sets of new Tubes, still remaining serviceable.

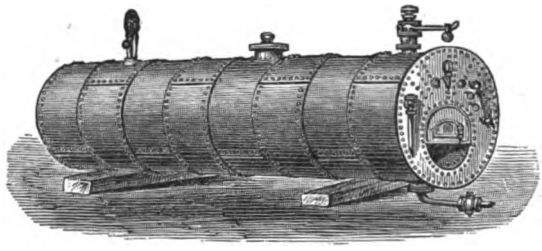
Horse-Power.	Price.	Height.	Diameter.	Weight.
1	£20	3 feet 6 inches	1 foot 4 inches	4 cwt.
1½	£24	4 feet 3 inches	1 foot 7 inches	6 cwt.
2	£28	4 feet 8 inches	1 foot 9 inches	7½ cwt.
3	£34	5 feet 8 inches	2 feet 1 inch	10½ cwt.
4	£40	6 feet 2 inches	2 feet 5 inches	15½ cwt.
5	£47	6 feet 10 inches	2 feet 9 inches	18¼ cwt.
6	£55	7 feet 6 inches	2 feet 9 inches	19½ cwt.
8	£66	7 feet 11 inches	3 feet 0 inches	28 cwt.
10	£77	8 feet 9 inches	3 feet 3 inches	36½ cwt.
12	£90	9 feet 3 inches	3 feet 6 inches	46 cwt.
15	£105	10 feet 10 inches	4 feet 0 inches	57 cwt.

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SHANK'S

CORNISH STEAM BOILERS

(SINGLE FLUE).



In the construction of these Boilers the most modern Plant and Machinery are employed, without which cheapness of production and excellence of workmanship are impossible. The Plates are all of Best Yorkshire or equal quality; the Fire Box for two-thirds of the circumference is of Lowmoor Iron, while all the Plates are rivetted by Hydraulic Machinery, every Rivet being subjected to a strain of 25 tons, the result being that the joints are almost as tight as if the Plate had been solid.

The Boilers are all tested by Hydraulic pressure to 120 lbs. per square inch before leaving the Works.

For Shipment, the Boilers can be made in Halves or with the Plates fitted and ready for rivetting on arrival at their destination.

SIZES AND PRICES.

	4 HP.	6 HP.	8 HP.	10 HP.	12 HP.	16 HP.	20 HP.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
Length of Boiler	10 0	11 6	14 6	16 0	17 0	19 0	23 0
Diameter of Boiler	3 2	3 9	4 0	4 4	4 8	5 3	5 4
Diameter of Flue	1 8	2 0	2 1	2 2	2 4	2 7	2 9
Approximate Weight without	ton. cwt.	ton cwt.	tons cwt.	tons cwt.	tons cwt.	tons cwt.	tons cwt.
Mountings	1 5	1 13	2 6	3 3	3 10	4 2	5 10
Approximate weight with Mountings	1 9	1 19	2 15	3 10	3 17	4 16	6 5
Price without Mountings ...	£40	£54 5	£70 10	£86	£95	£120	£155
Mountings, extra	£13	£15 15	£17 10	£19	£20	£21	£25

The 20-Horse Power Boiler is Double-Rivetted on the Longitudinal Seams.

The Manhole and all Mudhole Doors are provided without extra charge.

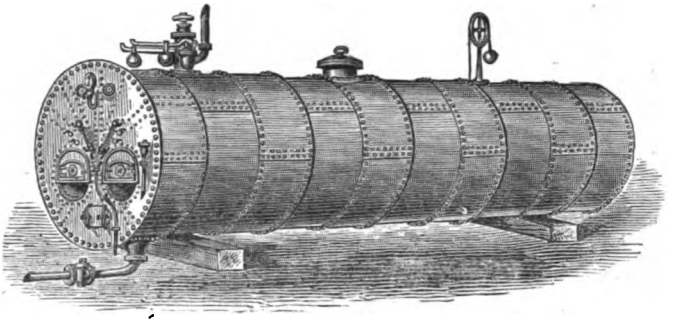
The Mountings consist of Furnace Front and Door, Fire Bars, Bearers, Dead Plate and Damper, Damper Frame and Weight, Fusible Plug, one Safety Valve with Lever and Weight, one Pressure Gauge, one set of Water Gauge Mounting, two Gun Metal Try-Cocks, one Blow-off Cock, one Feed Check Valve, and one Steam Stop Valve.

N.B.—These Boilers can be fitted with "Galloway's" Patent Conical Cross Tubes at £3 per Tube extra.

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LANCASHIRE STEAM BOILERS

(DOUBLE FLUE).



SIZES AND PRICES.

	25 HP.	30 HP.	35 HP.
Length of Boiler	25 feet 0 inches	28 feet 0 inches	30 feet 0 inches
Diameter of Boiler	6 feet 0 inches	6 feet 6 inches	7 feet 0 inches
Diameter of Flues	1 foot 9 inches	2 feet 3 inches	2 feet 6 inches
Approximate Weight without Mountings	8 tons 5 cwt.	9 tons 12 cwt.	12 tons 5 cwt.
Approximate Weight with Mountings	9 tons 2 cwt.	10 tons 10 cwt.	14 tons 0 cwt.
Price without Mountings	£220	£250	£330
Mountings, extra...	£30	£35	£45

The Boilers are Double-Rivetted on the Longitudinal Seams.

The Manhole and all Mudhole Doors are provided without extra charge.

The Mountings consist of Furnace Front and Door, Fire Bars, Bearers, Dead Plate and Damper, Damper Frame and Weight, Fusible Plug, one Safety Valve with Lever and Weight, one Pressure Gauge, two sets of Water Gauge Mounting, two Gun Metal Try-Cocks, one Blow-off Cock, one Feed Check Valve, and one Steam Stop Valve.

The Plates are all of Best Yorkshire or equal quality; while the Fire Box for two-thirds the circumference is composed of Lowmoor Iron, and the whole are Rivetted throughout by Hydraulic Machinery, every Rivet being subjected to a strain of 25 tons, the result being that the smallest possible inequality is completely filled up, and the joint made almost as tight as if the Plate had been solid.

The Boilers are all tested by Hydraulic pressure to 120 lbs. per square inch before leaving the Works.

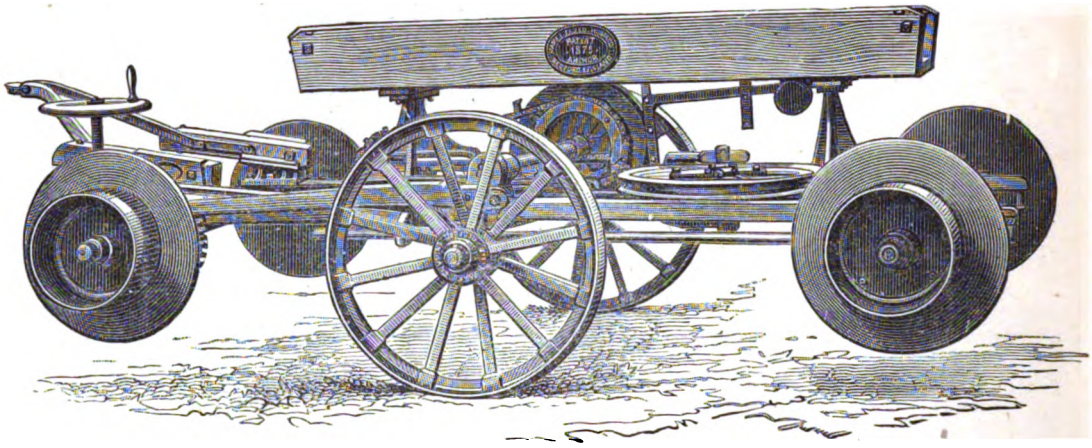
For Shipment, the Boilers can be made in Halves or with the Plates fitted and ready for rivetting on arrival at their destination.

N.B.—These Boilers can be fitted with "Galloway's" Patent Conical Cross Tubes at £3 per Tube extra.

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ANCHORS.

Howard's Patent Self-Moving Anchor.



This Anchor is mounted on a pair of high Wheels with a Cranked Axle in the Centre, so that it can be raised for removal in a few minutes.

By a Self-acting Arrangement, operated by the Draught Rope, the Anchor is moved forward along the headland to a length corresponding to the various widths of the implements used.

It works automatically when properly adjusted, and only requires occasional attention in steering when the fields or headlands are of irregular shape.

Price, with 100 yards of Steel Wire Rope for Headland £50 0 0

Barford & Perkin's Patent Self-Acting & Self-Lifting Anchor.

Price, with 4 Discs and Savage's Patent Lever Arrangement, suitable for from 8 to 12-Horse Power £50 0 0

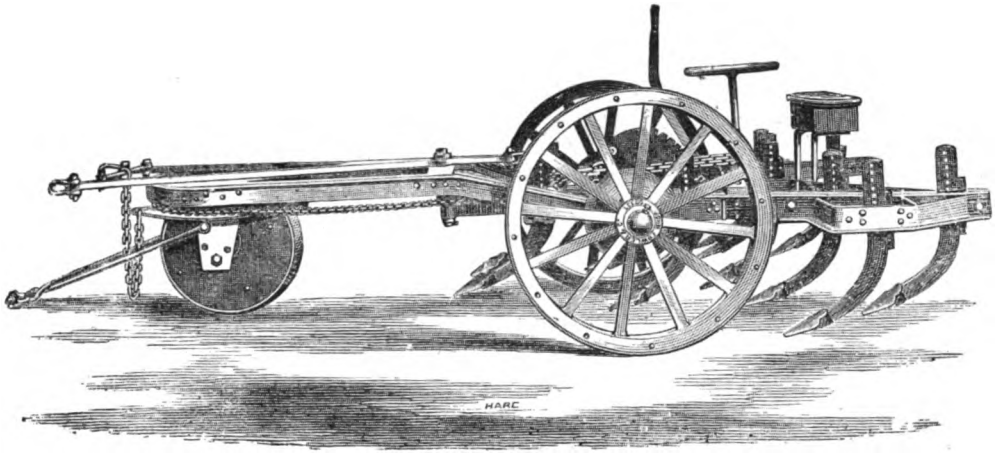
Fowler's Patent Self-Moving Anchors.

Price, with 6 Discs, Lifting Jack, Headland Ropes, and all Tools complete, suitable for 12-Horse Engine £60 0 0

Price, with 4 Discs, Lifting Jacks, Headland Ropes, and all Tools complete, suitable for 8-Horse Engine... ... ... £49 0 0

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FOWLER'S
PATENT TURNING CULTIVATOR.



This implement is adapted to be worked by all systems of Steam Cultivating Machinery. It consists of a strong Iron Frame, carrying, according to circumstances, from 5 to 13 Tines, and resting on three Road Wheels, the Front Wheel being the Steering Wheel. The Axle of the two Hind Wheels is Cranked, so that, by its being turned, the Frame is lowered or raised, and by these means the depth of the Tines adjusted. The long end of the Draft Bar, or "Patent Turning Lever," is provided with two Arms to which the two ends of the ropes are attached. The Arms are set at an angle, for keeping the tail rope clear of the implement. The Lever itself is held by a vertical stud fixed to the Frame, considerably behind the Steering Wheel. This position of the draft-stud (the subject of a special and important patent) gives the necessary liberty and power to the Steering Wheel, and enables it to lead the implement at almost any angle out of the line of the pulling rope. On the short end of the Turning Lever is a chain communicating with a quadrant on the Crank Axle, and as the Lever is pulled round, the chain, acting on the quadrant, turns the Axle, lifts the Frame, and raises the Tines out of the ground. The plan of operation is as follows :—As soon as the Cultivator is brought up to the headland, the reverse pull brings the Lever round and lifts the Tines out of the ground, and they are held up by a Catch ; when lifted the required height the Lever strikes against a stop and the implement turns into new ground ; the man (who never leaves his seat) releases the Catch, the Tines drop into the ground, and the implement is drawn across the field.

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FOWLER'S

PATENT TURNING CULTIVATOR

(CONTINUED).

The principal advantages of this excellent implement are as follows:—Its size is only limited by the power of the engines, which thus may be used to their utmost capability. It smashes up the soil, working steadily, and always preserving a perfectly uniform depth. Even the largest implements of this description require only one man in attendance. In turning round, no additional work whatever is required, and scarcely any time is lost, whilst the implement, however wide, at once moves into new land, leaving small and regular headlands. On average soil 30 to 50 acres per day may be efficiently cultivated. Ridging Bodies attached to the Frame of this Cultivator make an effective and easily-handled Ridging implement. The Ridging Bodies are attached without taking away the Tines, and both operations are done at the same time.

This implement is well suited for the last operation in autumn, as it effectively exposes the soil to the action of the atmosphere.

No. of Tines.	Prices Wrought Iron Tines.	Steel Tines.
5	£60 0 0	£ 62 0 0
7	£69 0 0	£ 73 0 0
7 (extra strong)	£79 0 0	£ 89 0 0
9	£79 0 0	£ 85 0 0
9 and 11 (2 Tines carried by brackets)	£85 0 0	£ 90 0 0
13	£95 0 0	£102 0 0

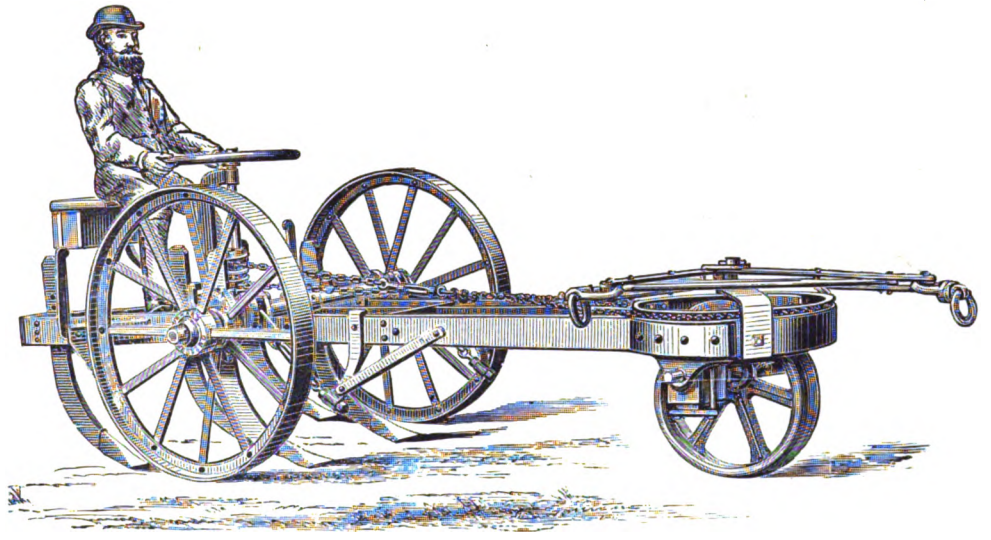
Approximate Weights and Measurement for Packing for long Sea Voyages.

Number of Tines.	Dimensions and Weight of the Largest Case.				Total Approximate Weight and Measurement.	
	Length. ft. in.	Width. ft. in.	Height. ft. in.	Weight. cwt.	cwt.	Cubic Feet.
9 and 11 Tines... ...	16 2	7 4	2 0	25	51	329
7 and 9 Tines... ...	13 10	6 6	2 0	20	45	272
9 Tine strong	15 6	7 0	2 0	23	46	297
7 Tine strong	13 10	6 4	2 0	21	43	267

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HOWARD'S

PATENT SELF-LIFTING AND SELF-TURNING CULTIVATOR.



This is a powerful implement for breaking up or smashing strong land to a great depth.

The Ropes are attached to the Cultivator so that when it arrives at the land's end, and the direction of draught reversed, the implement is lifted out of work and turned round for the next bout by a self-acting operation without the man getting off his seat.

The Tines are arranged so as to cut out the wheel tracks, and the Shares are of various widths.

No. of Steel Tines.					
5.	Self-lifting and Self-turning Steam Cultivator	£45	0	0
5.	Extra strong do. do. do.	£55	0	0
7.	Self-lifting and Self-turning Steam Cultivator	£55	0	0
7.	Extra strong do. do. do.	£65	0	0
9.	Self-lifting and Self-turning Steam Cultivator	£65	0	0
9.	Extra strong do. do. do.	£75	0	0
11.	Self-lifting and Self-turning Steam Cultivator	£75	0	0

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FOWLER'S PATENT DISCER.

This Implement is intended to cultivate newly reclaimed soil without tearing up the solid furrow and bringing the turfy matter to the top. It does this most effectively, merely pulverising the top to a depth of three or four inches, and it leaves the turf at the bottom to rot, and considerably reduces the expense of pulverisation for a crop.

In moss and grass land this implement is very valuable, and it may be used with advantage in ordinary cultivation.

Price £70 0 0

FOWLER'S DITCHING MACHINE.

This Implement is specially constructed for opening wide drainage or irrigation ditches. For the special requirements of Sugar and Cotton Cultivation it will be found very useful. Near the front end the Frame is provided with a Rope Sheave, round which the rope from one of the Ploughing Engines passes, its other end being fixed to the Hind Wheel of the same Engine. The strain exerted by the Engine on the Implement is thus doubled.

The Implement is raised or lowered by turning a Cranked Axle on the Hind Wheels. The ditch is cut by two Coulters and a Share, after which a third Central Coulter splits the mass of earth to be removed into two halves. Two long straight mould-boards conduct the earth upwards and deposit it on both sides of the finished ditch.

Ditches of 1½ to 2 feet in depth can be made at the rate of a mile an hour.

Price £110 0 0

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FOWLER'S PATENT DRAINING PLOUGH.

This Implement is adapted to be worked by the ordinary Ploughing Engine. It may be used as a Mole Plough or to put in pipes, and can be safely worked to a depth of three feet six inches in clay soils. This Plough gained the Royal Agricultural Society's Medal at Exeter in 1850, at Gloucester in 1853, and at Lincoln in 1854, where it was first worked by Steam Power. The work done by it is still giving entire satisfaction.

Price £50 0 0

BARFORD & PERKIN'S

STEEL DRIVING CHAINS AND PULLEYS.

Suitable for driving heavy machinery and for connecting Windlass with Engine in Steam Cultivation.

Price per Set £21 10 0

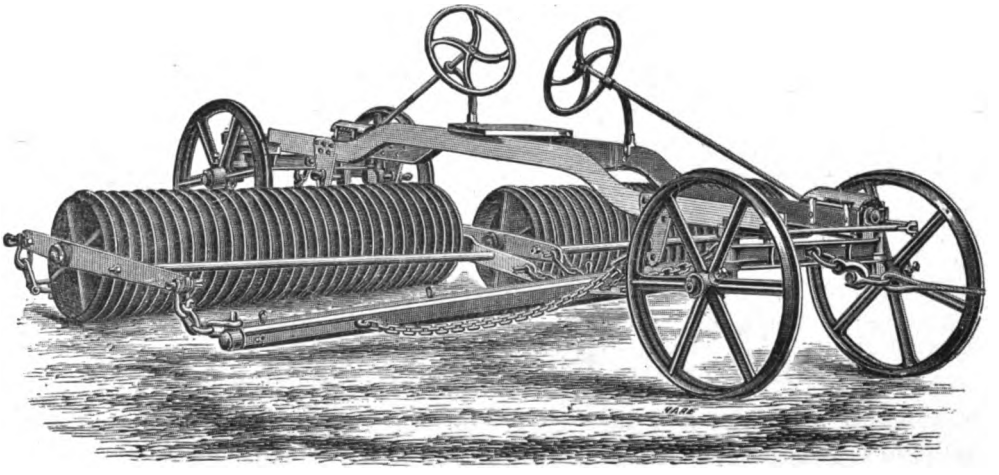
BARFORD & PERKIN'S

PATENT DRIVING CORD ARRANGEMENT,

By means of which one man can drive both Engine and Windlass together. Simple and thoroughly efficient.

Price £5 0 0

FOWLER'S STEAM ROLLER.



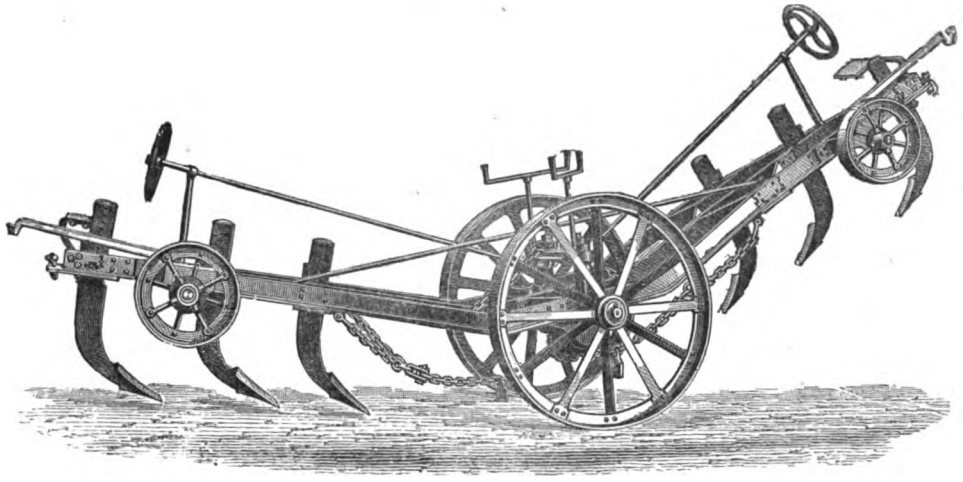
This Implement is made in two halves, taking a total width of 15 feet, and may be fitted with any description of Rollers. In moving from field to field the two halves are pulled one behind the other without difficulty.

Steerage Frame, Chains and Poles ... ... Price £37 0 0
Rings and Axles for ditto ... ...per cwt. £ 0 12 0

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FOWLER'S

EXTRA STRONG GRUBBER OR KNIFER.



This Implement is extremely valuable upon stiff clay land. By working it two feet deep the subsoil can be stirred and aërated without at all interfering with the surface. The benefits which result from this operation are of the utmost importance. By its use the land is quite altered in its nature, and the advantage to the crops has been of a very marked description. The drainage is also greatly assisted, and we wish to call the special attention of occupiers of clay land to this implement. It is made with one, two, or three Tines.

It is also adapted for removing stones or tree roots, and can be worked three feet deep.

This is an excellent implement for stirring up the subsoil of old grass land, and to all owners of clay land it is a decided advantage.

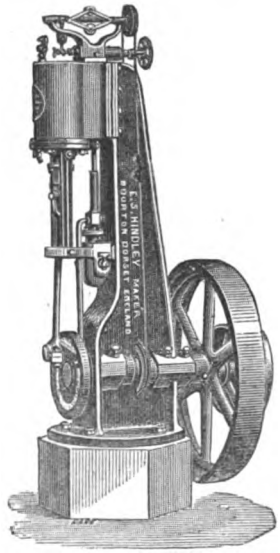
| | | |

HINDLEY'S

VERTICAL STEAM ENGINE,

With Feed Pump, High Speed Equilibrium Governor, Turned Fly-Wheel, and Pulley complete.

This Engine is self-contained, and is sent out complete and ready for use; it occupies the smallest possible space and works without vibration.



All the parts are strong and well proportioned; special attention has been given to ensure simplicity and easy management.

Nominal Horse Power. ...	1	1½	2	3	4	5	6	8	10	12	15
Price, with Feed Pump and Governor	£15	£18	£21	£28	£35	£45	£52	£60	£70	£80	£115
Link Reversing Gear	60/-	60/-	80/-	80/-	100/-	120/-	130/-	150/-	150/-	180/-	200/-
Packing in close Case, extra	12/-	15/-	18/-	20/-	24/-	28/-	32/-	38/-	45/-	55/-	65/-
Diameter of Cylinder ..... ins.	3	3½	4	5	5¾	6¼	7¼	8	9	10	12
Length of Stroke..... ins.	4½	5¼	6	7½	8	9	10	11¼	13	15	17
Diameter of Fly-Wheel ..... ins.	16	19	21	26	30	34	39	45	54	66	78
Revolutions per Minute	300	270	240	210	180	160	150	135	125	115	110
Weight for Shipment ..... cwt.	2	2¾	4	6	8	9½	15	20	25		
Measurement for Shipment...cub. ft.	11	13	14	16	22	31	40	50	60		
Space occupied at Work ..... ins.	16	19	21	26	30	34	39	45	54	66	78
Space occupied at Work x	x	x	x	x	x	x	x	x	x	x	x
Space occupied at Work ..... ins.	21	22	25	31	34	39	42	42	43	54	66

These Engines use the steam expansively; but variable Expansion Gear can be added to the 8, 10, 12 and 15 Horse-power Engines.

The Governor is very sensitive, and can be adjusted to control the Engine at any speed within reasonable limits. The number of revolutions per minute given above will be the best for ordinary work.

All the parts are made to template, and can be supplied promptly if required.

The Crank Plate is provided with two holes, and the Crank Pin can be placed in either one or the other, according to the direction in which it is most convenient to run the Engine.

For Factories and places where the machinery is not all close together, it will often be found better to employ several smaller Engines than one large one, the latter requiring the addition of costly shafting and gearing to connect to the various machines.

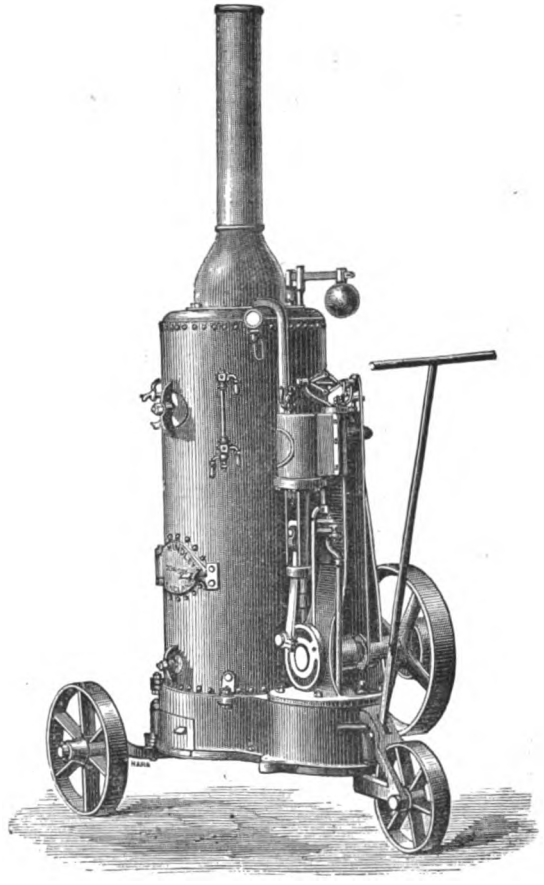
A valuable feature in these Engines is, that the Gun Metal Bearings, which are of unusual length, and fitted with screw adjustments, are also so prepared that new ones can be easily put in, when required, by any labourer of ordinary intelligence, *no fitting being required*. The Fly-Wheel is turned, and a Pulley is also supplied.

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HINDLEY'S

VERTICAL STEAM ENGINE AND BOILER

On Three Travelling Wheels with Handle.



These Vertical Engines and Boilers are extensively used for Chaff Cutting, Pulping, Crushing, Grinding, Pumping, Hoisting, Printing Presses, Lathes, Circular Saws, Breweries, Mills, Factories, &c. They are simple, strong, and compact; easily managed, and occupy very little space.

The Engine and Boiler are each separately bolted to the Water Tank Foundation, the only connections being the steam and water pipes.

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HINDLEY'S

VERTICAL STEAM ENGINE AND BOILER

On Three Travelling Wheels with Handle,

(CONTINUED).

Nominal Horse Power.	1	1½	2	3	4	5	6	8
Price.....	£41	£49	£57	£75	£95	£110	£125	£145
Extra for second Lock-up Safety Valve	50/-	50/-	50/-	60/-	60/-	60/-	60/-	70/-
,, Hand Pump.....	60/-	60/-	60/-	80/-	80/-	80/-	80/-	100/-
,, Link Reversing Gear	60/-	60/-	80/-	80/-	100/-	120/-	130/-	150/-
,, Set of spare Gun Metal Bearings and Pump Valves	20/-	30/-	40/-	40/-	50/-	53/-	55/-	60/-
,, Tarpaulin.....	12/-	15/-	18/-	21/-	25/-	30/-	40/-	50/-
,, Packing in close Case.....	20/-	25/-	33/-	40/-	50/-	60/-	70/-	
Diameter of Cylinder ..... ins.	3	3½	4	5	5¾	6½	7¼	8
Length of Stroke..... ins.	4½	5¼	6	7½	8	9	10	11½
Diameter of Fly-Wheel ..... ins.	16	19	21	26	30	34	39	45
Revolutions per Minute	300	270	240	210	180	160	150	135
Height of Boiler ..... ins.	42	49	56	68	74	82	91	95
Diameter of Boiler ..... ins.	16	19	21	25	29	33	33	36
Number of Vertical Tubes.....	7	7	12	12	18	18	18	24
Weight for Shipment ..... cwt.	9¼	13¼	16¼	23¼	33	40	46	62
Measurement for Shipment...cubic feet	25	39	50	71	90	113	130	160

The Governor is of an efficient, simple construction, giving extreme regularity of speed. The Bearings are long, adjustable, and readily accessible; indeed, the entire Engine and Boiler are so simple that in many cases boys are working them.

The Boilers have Vertical Tubes, which give the largest heating surface, and are preferable to other forms of Vertical Boilers, for the reasons stated on page 495. The fuel consumed is extremely moderate, and it is often found that refuse material, such as sawdust and wood, with a little coal or coke, produces sufficient steam. The Piston and Slide Rod, Pins, etc., are all steel. All parts are finished to template; and the workmanship and materials generally are of the best description. The Feed Pump being continuous in its action, the water can be maintained in the Boiler at a proper level by regulating the tap occasionally.

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HINDLEY'S

VERTICAL STEAM ENGINE AND BOILER,

On Water Tank Foundation, requiring no Fixing.

This Engine is similar to that described on the previous page, but without Travelling Wheels and Handle.

The Boilers are all tested to 150 lbs. pressure.

Nominal Horse Power.	1	1½	2	3	4	5	6	8	10	12	15
Price	£39	£47	£55	£70	£88	£100	£115	£135	£157	£180	£230
Extra for second Lock-up Safety Valve	40/-	40/-	50/-	50/-	60/-	60/-	60/-	70/-	70/-	70/-	70/-
,, Hand Pump	60/-	60/-	60/-	80/-	80/-	80/-	80/-	100/-	100/-	120/-	130/-
,, Link Reversing Gear ...	60/-	60/-	80/-	80/-	100/-	120/-	130/-	150/-	150/-	180/-	200/-
,, Set of spare Gun Metal Bearings and Pump Valves	20/-	30/-	40/-	45/-	50/-	53/-	55/-	60/-	70/-	80/-	90/-
,, Packing in close Case ...	20/-	25/-	33/-	40/-	50/-	60/-	70/-	...	...	...	...
Diameter of Cylinder ..... ins.	3	3½	4	5	5⅝	6½	7¼	8	9	10	12
Length of Stroke..... ins.	4½	5¼	6	7½	8	9	10	11½	13	15	17
Diameter of Fly-Wheel ..... ins.	16	19	21	26	30	34	39	45	54	66	78
Revolutions per Minute	300	270	240	210	180	160	150	135	125	115	110
Height of Boiler ..... ins.	42	49	56	68	74	82	91	95	99	111	130
Diameter of Boiler ..... ins.	16	19	21	25	29	33	33	36	39	42	48
Number of Vertical Tubes.....	7	7	12	12	18	18	18	24	30	34	37
Weight for Shipment ..... cwt.	8¼	12	15	22	30	36	40	56	65		
Measurement for Shipment...cub. ft.	25	39	50	71	90	113	130	160	195		
Space occupied at Work ..... ins.	33	40	43	50	55	63	66	82	94	102	108
x ins.	x	x	x	x	x	x	x	x	x	x	x
ins.	25	28	31	37	41	45½	47	50	58	66	76

These Engines are well proportioned, the Gun Metal Bearings are long, and all the working parts are particularly accessible and easy to adjust as they wear. The Governor is of improved construction, insuring a very uniform speed under varying work. They work with extreme steadiness.

The Boilers—which are made with Vertical Tubes and have a large heating surface—are the same as are more fully described on page 495, to which please refer.

Economy in fuel is provided for by the Water Tank Foundation being also an efficient water heater.

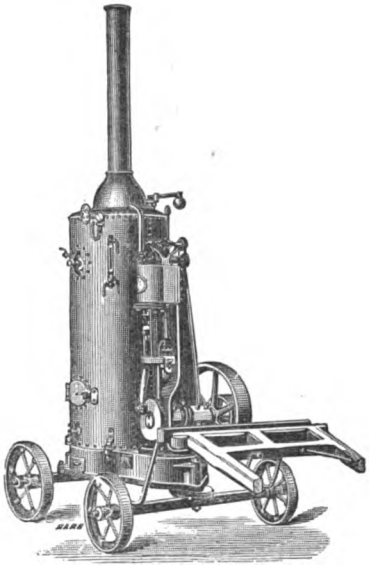
Special fittings are provided to comply with Foreign Governmental regulations,

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HINDLEY'S

VERTICAL STEAM ENGINE AND BOILER

On Four Travelling Wheels with Shafts.



Nominal Horse Power.	1	1½	2	3	4	5	6	8
Price.....	£42	£50	£59	£79	£97	£112	£128	£150
Extra for second Lock-up Safety Valve	40/-	40/-	40/-	50/-	50/-	50/-	60/-	60/-
,, Hand Pump	60/-	60/-	60/-	80/-	80/-	80/-	80/-	100/-
,, Link Reversing Gear	60/-	60/-	80/-	80/-	100/-	120/-	130/-	150/-
,, Set of spare Gun Metal Bearings and Pump Valves	20/-	30/-	40/-	45/-	50/-	53/-	55/-	60/-
,, Tarpaulin.....	12/-	15/-	18/-	21/-	25/-	30/-	40/-	50/-
,, Packing in close Case	20/-	25/-	30/-	40/-	45/-	50/-	55/-	60/-
Diameter of Cylinder ..... ins.	3	3½	4	5	5¾	6½	7¼	8
Length of Stroke..... ins.	4½	5¼	6	7½	8	9	10	11½
Diameter of Fly-Wheel ..... ins.	16	19	21	26	30	34	39	45
Revolutions per Minute	300	270	240	210	180	160	150	135
Height of Boiler ..... ins.	42	49	56	68	74	82	91	95
Diameter of Boiler ..... ins.	16	19	21	25	29	33	33	36
Number of Vertical Tubes.....	7	7	12	12	18	18	18	24
Weight for Shipment ..... cwt.	10½	16	17⅓	25	37	42	48½	65
Measurement for Shipment...cubic feet	25	39	50	71	90	113	130	160

The Boilers are large and afford a great amount of heating surface; the Wheels are strongly bonded and have wrought iron spokes. The Feed Pump is so formed that with ordinary care it cannot fail to work; the Governor maintains the Engine at a uniform speed. The heavier portions of both Boiler and Engine being placed low down, these Engines travel safely on ordinary roads. A Pulley is provided in addition to the Fly-Wheel, suitable for driving a Chaff-cutter or any similar machine.

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INSTRUCTIONS FOR STARTING & WORKING HINDLEY'S STEAM ENGINES.

TO PREPARE FOR WORK—

1—Fill the Boiler :—Unscrew the brass plug and pour in water till it shows 2 inches high in the glass water gauge.

2—The water gauge should be used with all three handles pointing downwards. When in that position the bottom cock is closed, and the two connecting it with the boiler are open.

3—Open the bottom cock of the water gauge and, if water does not flow out, unscrew the plugs opposite the other two cocks, and pass a piece of wire through each into the boiler to ensure the passage being clear, put in the plugs and shut the bottom cock.

4—Open the bottom gauge cock and, if water does not flow out, remove the screw plug in front and clean with a piece of wire.

5—Fill the water tank foundation ; pour in water at the lip.

6—Turn up the smoke dome, and clean all the tubes with the brush provided for the purpose. This should be done daily.

7—Lift the safety valve lever, and with the other hand lift the brass valve and turn it round to ascertain that its action is not impeded. If it sticks, take out the lever carefully, wipe the valve and seat and replace.

LIGHT THE FIRE—

8—Light with a little wood and cover with coals, avoid soft and smoky, and burn, if possible, only hard qualities of coal : there will be less soot to fill the tubes, and less clinker to remove from the bars.

Keep the fire *thin*, not more than 2 or 3 inches thick at most ; a greater depth impedes rather than assists the making of steam.

9—While steam is getting up, turn the fly-wheel carefully to see that none of the bearings are screwed too tight, and that the pump is not frozen. In frosty weather pour some gallons of hot water over the pump and its pipes before starting.

10—Oil all the bearings, namely, 2 main shaft bearings, 2 ends of connecting rod, 2 sides of guide block, 2 ends of eccentric rod, all the governor joints, and put tallow in cylinder lubricator.

11—Slide back the safety valve weight to the shortest notch, and when the steam begins to escape move it to a longer distance to maintain a higher pressure as required.

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INSTRUCTIONS FOR STARTING & WORKING

(CONTINUED).

START THE ENGINE—

12—Open both pet cocks of cylinder and turn on a *very* little steam. Assist the Engine to start by moving the fly-wheel.
Start *very* slowly, and gradually turn on more steam, till the desired speed is attained. Do not close the cylinder cocks *till the steam comes from them dry.*

13—As soon as the Engine is started see that the pump is working. If not working, open the back water cock (below the check valve) and if then it commences, the click of the valves will be heard. If this is not heard, open the pet cock of the pump and place the finger lightly against the nose and it should eject water in a few strokes. Close the pet cock and the pump is at work. If it refuses to do so, either one or both of the valves is stuck into its seat, or it is kept open by something thrown into the water. The pump valves must be taken out and cleaned; unscrew the two screws over them, take out the valves, wipe them and their seats and replace. The packing of the pump valves must be kept sound, or the pump will not work.

14—The pump being at work, close the back water cock and the boiler will be fed; by a careful regulation of this cock, experience will enable a person to feed the boiler regularly.

DURING WORK—

15—The boilers are all tested to 150 lbs., but the pressure recommended is 55 to 60 lbs. It is not *desirable* to go beyond, but with careful management 70 lbs. may be used.

16—If at any time the water cannot be seen in the gauge glass, take out the fire *immediately,* open the safety valve and blow off the steam; then remove the brass plug and pour water into the boiler till it shows 2 inches in the water gauge as at first; take out the pump valves and the check valve, and wipe clean and replace them.

17—Never unscrew the check valve while steam is up. This will seldom be needed, but should only be done when the boiler is cold.

18—Occasionally while working, open the gauge cocks to ascertain the height of water in the boiler. Water should issue from the lower one, and steam from the upper. This is necessary because if the glass water gauge gets choked with dirt the *water* may show there when there is not a proper quantity in the boiler.

19—Occasionally close the lower cock of the water gauge and open the bottom one; water only should then blow out. Now close the upper cock and open the lower one and water should issue; close the bottom cock.

20—Keep the ashpit clear of ashes, examine all nuts and bolts and bearings, safety valve, &c., and frequently oil all bearings; the cylinder should be greased about every half-hour. If a bearing gets hot, stop and ease the screws and wait till cool.

21—If steam comes from the water tank, the check valve leaks; look well to the height of water in gauge glass, and if it sinks rapidly close the back water cock and take out the fire and blow off steam; take out check valve, clean and replace it.

22—The governor can be regulated as follows:—If the Engine is running too slowly when the starting valve is fully open, turn the thumb screw or small brass wheel gradually to the left, if too fast turn it to the right until the desired speed is obtained. This speed should then be maintained under varying work with tolerable accuracy, and if it is not so it is because the governor wants either to be repacked (see 28) or to be cleaned and oiled.

23—See that the band driving the governor is sufficiently tight.

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INSTRUCTIONS FOR STARTING & WORKING

(CONTINUED).

AFTER WORKING—

24—Never throw water into the fire to extinguish it, or wet coal to damp down the fire at meal time.

25—Whenever the Engine is stopped, or in finishing work, open both cylinder cocks. Leave the back water cock open and open the pet cock of the pump.

GENERAL—

26– Use only clean water, and soft, rather than hard. There is a fine strainer at the lip of the water tank which should be renewed if it accidentally gets broken.

27 –Use the best olive or lard oil for the bearings, and tallow for the cylinder, and when the Engine is out of use let the bright parts be well greased.

28—There are five glands that must be kept packed carefully with hemp or patent packing, namely—Governor, Piston Rod, Slide Rod, Pump, and Starting Valve. When screwing down fails to keep these steam tight, remove the old packing, soak some new hemp in tallow and wind it *loosely* round the spindle and press it into the box with a piece of *wood*. Some care is needed in this operation to ensure the joint being steam tight without the gland being screwed down so tight as to prevent the spindle working freely. Special care should be taken with the governor packing to let the spindle be free. Patent packing requires no grease.

29—To put a new glass in water gauge, close both cocks connecting with boiler, remove the guard, unscrew the top cap, the bottom cock, and the 2 cleaning screws. Now clean away the broken glass by means of a small iron wire hook. Put a rubber ring on the new glass and pass it upwards till the ring is at the top of the bottom stuffing box. Put on the top ring and with a piece of thin wood press it down into its place. Replace both cleaning screws and top cap and bottom cock, open both cocks to the boiler and the steam will force the rings firmly into their places and make tight joints. The glass should be just long enough to reach between the 2 cleaning screws.

30—To reverse the direction in which the engine runs, remove the crank pin to the other hole in the disc; this is done by disconnecting the connecting rod from the pin and then unscrewing the large nut behind the disc; be careful to get this large nut *tight* before starting and examine occasionally, for should it get loose it will do much damage.

31—If the Engine makes a knocking at the top and bottom of the stroke, some one or more of the bearings require tightening. Bearings are always wearing a little, and the ultimate durability of the Engine depends very much on keeping these well oiled and on their being screwed up as often as required. Where there are set screws, *first* unscrew the lock-nut half a turn or as much as needed, and then screw in the set screw and tighten the lock nut. Take care the bearings are not too tight. They should work freely without noise.

32—The proper speed for these Engines is as follows for each size, but within moderate limits it may be varied to suit different work—

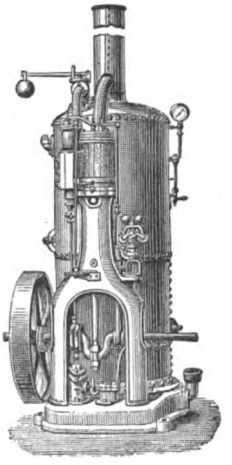
1	1½	2	3	4	5	6	8	10	Horse Power.
300	270	240	210	180	160	150	135	125	rev. per min.

33—New brasses and any parts can be had at once on application to the maker, giving description and name and size of Engine, and date when purchased.

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SHANK'S

VERTICAL STEAM ENGINES AND BOILERS.



These Engines are of new design and accurate construction; the working parts are few and simple, and are enclosed in a strong cast iron Frame all in one casting which secures perfect rigidity in work and protection to the parts. The Governor is very sensitive and correct in action.

The Base-Plate contains the Feed Water (which becomes heated) and the Boiler Feed Pump can be connected to pump from that or any other convenient source.

The Fly-Wheel or Pulley can be placed at either side of the Crank Shaft.

The Boilers have Cross Conical Tubes in the Fire Box, and are tested to 200 lbs. per square inch before leaving the works.

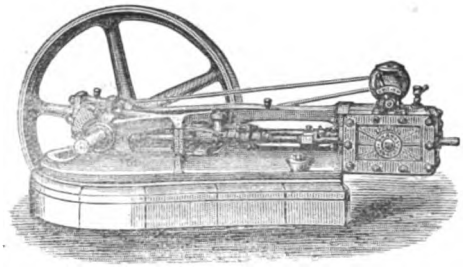
	2 HP.	3 HP.	4 HP.	5 HP.	6 HP.	8 HP.	10 HP.	12 HP.
Diameter of Cylinder.....	4¾ inches	5¾ inches	6¾ inches	7½ inches	8½ inches	9½ inches	10½ inches	11½ inches
Length of Stroke.....	9 inches	10 inches	10 inches	12 inches	12 inches	14 inches	14 inches	16 inches
Diameter of Fly-Wheel	2ft. 11in.	3ft. 0in.	3ft. 3in.	3ft. 7in.	4ft. 0in.	4ft. 9in.	5ft. 3in.	6ft. 0in.
No. of Revolutions per min.	160	150	150	130	130	120	120	110
Height of Boiler to Crown	5ft. 5in.	6ft. 5in.	6ft. 11in.	7ft. 5in.	7ft. 11in.	8ft. 11in.	9ft. 11in.	11ft. 11in.
Diameter of Boiler	2ft. 4in.	2ft. 6in.	2ft. 9in.	3ft. 0in.	3ft. 3in.	3ft. 9in.	4ft. 0in.	4ft. 3in.
Number of Cross Tubes.....	1	1	2	2	2	3	3	4
Price of Engine and Boiler combined	£70	£80	£90	£100	£110	£150	£175	£200
Packing, extra.....	35/-	40/-	45/-	50/-	55/-	75/-	87/6	100/-

Patent Automatic Expansion Gear can be fitted to the 8, 10, and 12 HP., Price, £15 extra. By this arrangement there is a saving in fuel of about 20 per cent., the steam being supplied in accordance with the *actual* requirements of the work to be performed.

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SHANK'S

PATENT HORIZONTAL STEAM ENGINE, "THE CALEDONIAN."



In this Engine the Cylinder is unusually large per Nominal Horse Power, and the Piston has a long stroke, which reduces the wear.

The Connecting Rod also has ample length, and the Crank is forged solid, planed, and made bright throughout.

The Framing, Bed-Plate, Motion Bars, and Bearings of Crank Shaft are all cast in one piece, ensuring rigidity and strength.

The Fly-Wheel can be placed at either end of the Crank Shaft, and the working parts of the Pump are of best gun metal.

The price of Engine includes Governor, Feed Pump, Steam Stop Valve, and all other parts necessary to make the Engine complete, *no extras*, whatever being required.

Dimensions and Prices of "The Caledonian" Steam Engines.

Horse Power	4	6	8	10	12	16	20
Diameter of Cylinder	6⅜ in.	8¼ in.	9½ in.	10⅛ in.	11¼ in.	12¾ in.	14½ in.
Length of Stroke	10 in.	12 in.	14 in.	14 in.	16 in.	20 in.	26 in.
Diameter of Fly-Wheel	3ft. 3in.	4ft. 0in.	4ft. 9in.	5ft. 3in.	6ft. 0in.	6ft. 2in.	7ft. 3in.
Width of Face of ditto	5½ in.	7½ in.	8 in.	8½ in.	9 in.	9½ in.	10¼ in.
Number of Revolutions per min.	150	130	120	120	110	80	70
Diameter of Crank Shaft	2½ in.	3⅛ in.	3⅜ in.	3½ in.	3¾ in.	4⅛ in.	4¼ in.
Price of Engine with Governor, Feed Pump, &c....	£35	£45	£60	£70	£88	£120	£150
Price of Engine with Cornish Boiler and Fittings, but without Exhaust and Connecting Pipes	£88	£115	£148	£175	£203	£261	£330
Price of Engine with Vertical Cross Tube Boiler & Fittings, Mounted on Cast Iron Base forming a Water Tank, with Steam and Water Pipe Connections complete	£90	£110	£150	£175	£200	—	—
Automatic Variable Expansion Gear, extra...	—	—	£15	£15	£15	£15	£18
Packing, extra	£1 15	£2 5	£2 15	£3 5	£3 15	£4 5	£5

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TANGYE'S

PATENT VERTICAL STEAM ENGINE,

With Tangye's Patent Governor.

These Engines are simple, compact, strong, and easily fixed, while the workmanship is excellent.

Nominal Horse Power...	2	3	4	6	10	14
Engine, with Tangye's Patent Governor	£20	£27	£34	£45	£70	£105
Feed Pump, extra	£2	£2	£2 10	£3	£4	£5
Foundation Bolts and Plates, extra ...	10/-	10/-	20/-	25/-	40/-	50/-
Metal Foundation, Template, and Oil Catcher, extra	5/-	6/-	8/-	10/-	15/-	20/-
Diameter of Steam Cylinder	4 in.	5 in.	6½ in.	8 in.	10 in.	12 in.
Revolutions per Minute	240	240	190	180	150	130
Diameter of Fly-Wheel	25 in.	30 in.	35 in.	40 in.	50 in.	60 in.
Width of Face, turned Bright...	3½ in.	4 in.	5 in.	6 in.	8 in.	10 in.
Diameter of Steam Pipe	1 in.	1¼ in.	1½ in.	2 in.	2½ in.	3 in.
„ „ Exhaust Pipe	1¼ in.	1½ in.	2 in.	2½ in.	3 in.	3½ in.

TANGYE'S

PATENT VERTICAL STEAM ENGINE,

With Vertical Boiler and Tangye's Patent Governor.

Nominal Horse Power...	2	3	4	6	10	14
Engine and Boiler complete, with Feed Pump	£52	£69	£89 10	£111	£169	£220
Diameter of Steam Cylinder	4 in.	5 in.	6½ in.	8 in.	10 in.	12 in.

The other dimensions are the same as in the preceding Table.

TANGYE'S VERTICAL STEAM ENGINE,

With Vertical Boiler, Mounted on Four Wheels, with Feed Water Tank, and Tangye's Patent Governor.

Nominal Horse Power...	2	3	4
Engine and Boiler complete on Wheels...	£57 10	£75	£95
Diameter of Steam Cylinder	4 inches	5 inches	6½ inches

The other dimensions are the same as in the preceding Table.

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TANGYE'S HORIZONTAL SOHO" ENGINE

With Vertical Boiler.

The Engine is strong and simple and of very compact design.

Nominal Horse Power	3	4	6	10	14
Engine and Boiler complete, with Feed Pump	£67	£87 10	£109	£174	£215
Diameter of Steam Cylinder	5 inches	6½ inches	8 inches	10 inches	12 inches
Revolutions per Minute...	240	190	180	150	130
Approximate Total Weight	29 cwt.	41 cwt.	52 cwt.	106 cwt.	125 cwt.
Diameter of Fly-Wheel	30 inches	35 inches	40 inches	50 inches	60 inches
Width of Face, turned	4 inches	5 inches	6 inches	8 inches	10 inches

TANGYE'S HORIZONTAL "SOHO" ENGINE,

With "Colonial" Tubular Boiler.

The Boiler has a large heating surface, and is adapted for any kind of fuel; semi-portable and compact, saving freight in shipment.

Nominal Horse Power of Engine	3	4	6
„ „ „ Boiler	4	6	8
Engine and Boiler complete, with Feed Pump	£69	£85	£109
Boiler only, with Steam and Furnace Fittings	£40	£45	£60
Diameter of Cylinder of Engine	5 inches	6½ inches	8 inches
Revolutions per Minute	240	190	180
Diameter of Fly-Wheel	30 inches	35 inches	40 inches
Width on Face, turned for Belting	4 inches	5 inches	6 inches
Length and width of Boiler... ... ... inches	54 by 24	66 by 27	90 by 30
Heating Surface of Boiler	50 feet	70 feet	116 feet

These Engines are fitted with extra large Boilers for rough fuel.

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TANGYE'S

HORIZONTAL "SOHO" ENGINE.

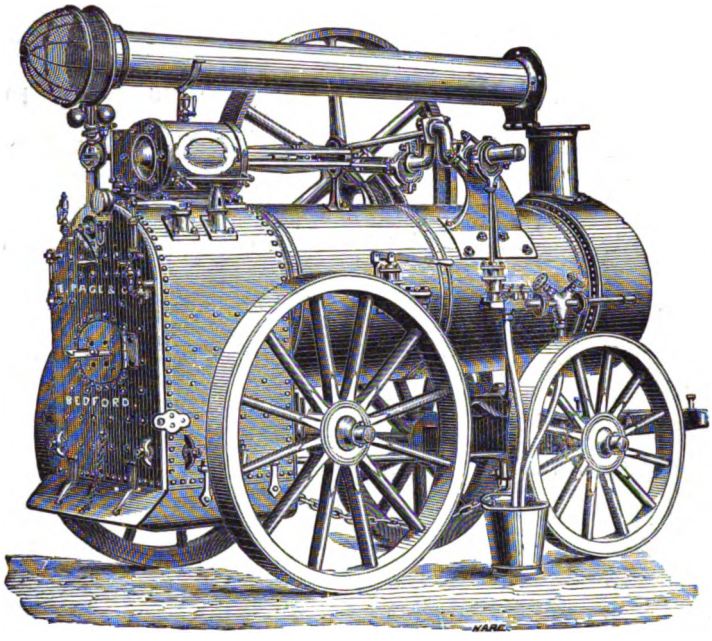
These Engines are simple, compact, durable, and very strong.

Nominal Horse Power	3	4	6	10	14
Engine, with Tangye's Patent Governor	£25	£32 10	£42	£66	£95
Feed Pump, extra	£2	£2 10	£3	£4	£5
Foundation Bolts and Plates, extra	15/-	20/-	25/-	40/-	50/-
Engine, with Governor, Cornish Boiler, and Fittings, but without Feed Pump and Steam Pipes ...	—	£90	£116	£173	£230
Metal Foundation, Template, and Oil Catcher...	6/-	9/-	12/-	20/-	25/-
Diameter of Steam Cylinder, inches	5	6½	8	10	12
Revolutions per Minute...	240	190	180	150	130
Diameter of Fly-wheel ... inches	30	35	40	50	60
Width of Face turned bright for Belting ... ... inches	4	5	6	8	10
Length of Fly-Wheel Shaft on each side beyond bearings ... inches	5	6½	8	10	12
Diameter of Steam Pipe... inches	1¼	1½	2	2½	3
„ Exhaust Pipes inches	1½	2	2½	3	3½
„ Suction and Delivery of Feed Pump ... ... inches	¾	¾	1	1	1¼
Ground Space occupied... inches	60 by 30	69 by 36	83 by 43	101 by 52	120 by 63

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GARRETT'S

PORTABLE STEAM ENGINES.



These Engines are light but strong, and are constructed of excellent materials.

The Fire Box is of Machine-flanged Lowmoor Iron with Corrugated Crown Plate, dispensing with the necessity for Crown Stays, and increasing the effective Heating Surface, while the weight is materially lessened.

By the use of the Feed Water Heater a large proportion of the exhaust steam is returned to the water with economical results both in fuel and water. The Cylinders are not steam jacketed.

SINGLE CYLINDER.

4 Horse Power	£150	8 Horse Power	£210
5 „ „	£165	10 „ „	£240
6 „ „	£180	13 „ „	£285

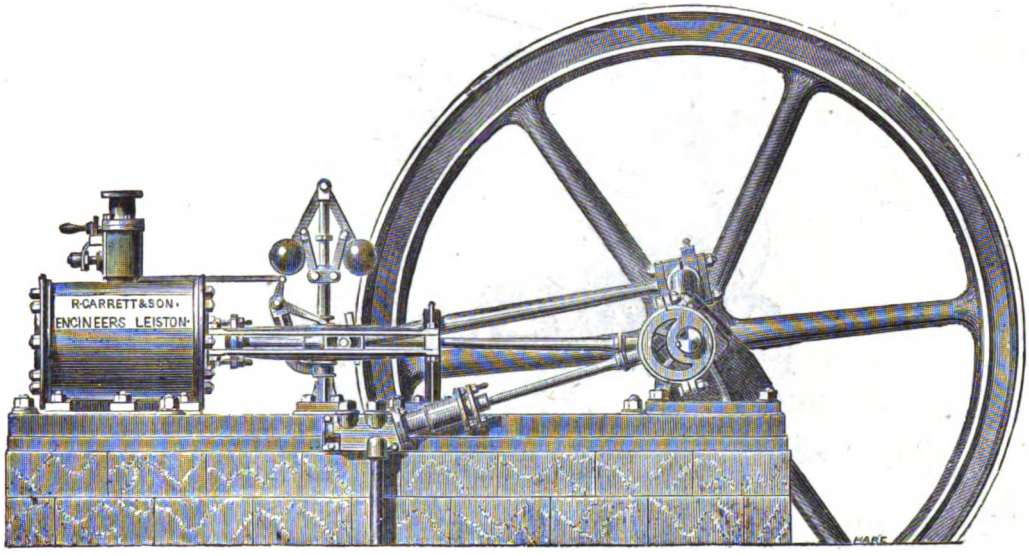
DOUBLE CYLINDER.

8 Horse Power	£235	14 Horse Power	£335
10 „ „	£260	16 „ „	£375
12 „ „	£300	20 „ „	£445

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GARRETT'S

HORIZONTAL FIXED STEAM ENGINE.



This Engine is perfectly self-contained and complete upon its own Bed Plate. The material and workmanship are such as to ensure durability and efficiency.

	Without Boiler and Piping.	With Boiler complete.
4 Horse Power Engine	£ 60 0 0	£120 0 0
6 „ „	£ 80 0 0	£160 0 0
8 „ „	£100 0 0	£200 0 0
10 „ „	£120 0 0	£240 0 0
12 „ „	£140 0 0	£280 0 0
14 „ „	£160 0 0	£320 0 0
16 „ „	£180 0 0	£360 0 0
20 „ „	£220 0 0	£440 0 0

Feed Water Heater, 4 to 10 Horse Power £10 0 0

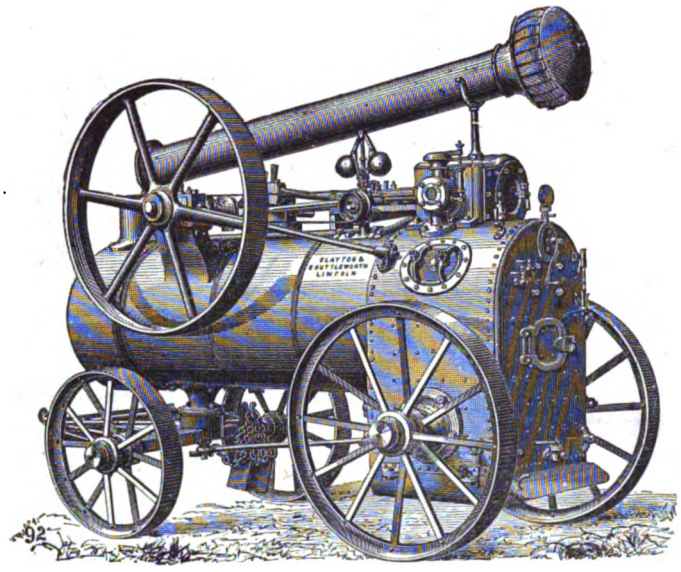
Ditto ditto 12 to 20 Horse Power £15 0 0

Variable Expansion Gear, £1 5s. per Horse Power.

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CLAYTON & SHUTTLEWORTH'S

PORTABLE STEAM ENGINES.



These Engines are simple, durable, and of excellent design, and the materials and workmanship are of the best quality.

The Boilers are of the most approved Locomotive type, and have large capacity and heating surface, and the Engines will develope more than double their nominal power while running at a moderate speed.

The Steam Cylinder is jacketed and covered with felt, wood, and sheet iron; the Crank Shaft Brackets are of wrought iron, arranged so as to allow the free expansion or contraction of the Boiler, and to prevent the heat from it being communicated to the Crank Shaft Bearings.

The Fire Box is of Lowmoor Iron and fitted with a Fusible Safety Plug. The Boilers are constructed for a steam pressure of 60 lbs. or 4 atmospheres, per square inch, and are tested with water to double this pressure.

A Steam Blast Pipe and Tap are fitted to the Engine Chimney so that the steam may be raised in about half the usual time.

The Travelling Axles are case-hardened, and the Wheel Naves are cast with a chilled bush. The oil is prevented from escaping by the Wheel Cap being screwed up tight against a leather washer in a manner similar to the patent axles used for carriages.

The Travelling Wheels are either of wood or wrought iron.

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CLAYTON & SHUTTLEWORTH'S

PORTABLE STEAM ENGINES

(CONTINUED).

The Boiler Fittings consist of one Stop Valve, one Signal Whistle, one Dial Steam Pressure Gauge, two Safety Valves, one with Lever and Spring Balance Pressure Gauge, and one in locked case, each having ample area for the safety of the Boiler; one Glass Tube Water Gauge, two Gauge Cocks, one Steam Blast Pipe and Tap, one or two Blow-off Cocks, Mud-holes and Man-hole, a close fitting Ashpan, with adjustable door for regulating the draught, and a Folding Chimney.

Each Engine is also supplied, free of extra charge, with a Waterproof Cover, Shovel and Firing Tools, Funnel, Tube Brush, Suction Hose, Water Heating Pipe, Wheel Slide and Chain, Lock Chain and Check Chain, Oil Cans, a complete set of case-hardened Wrenches, Screw Hammer, spare Gauge Glasses, and Fusible Safety Plugs.

The Engines can, if desired, be fitted with Expansion Valves for Hand Adjustment or with the Patent Self-acting Expansion Gear, the extra cost of which is soon recouped by the saving in fuel and repairs.

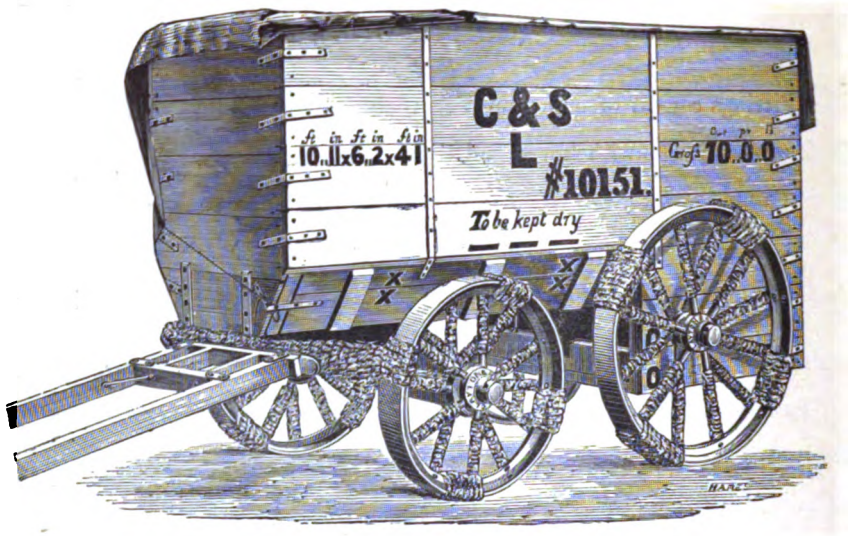
Single Cylinder Portable Steam Engines.

Nominal Horse Power.	Price.	Expansion Valve for Hand Adjustment.	Patent Self-acting Expansion.	Hand Pump or Injector.	Small Packing Cases for the Continent.	Full Packing for long Sea Voyages (see next page.)
2½	£105	£3	£ 7 10	£8	10/-	£3
3	£125	£3	£ 7 10	£8	10/-	£3
4	£150	£4	£10 0	£8	10/-	£4
5	£165	£5	£12 10	£8	10/-	£5
6	£180	£6	£15 0	£8	10/-	£6
7	£195	£7	£17 10	£8	12/6	£7
8	£210	£8	£20 0	£8	12/6	£8
10	£240	£10	£25 0	£8	12/6	£10
12	£280	£12	£30 0	£8	12/6	£12

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CLAYTON & SHUTTLEWORTH'S
PORTABLE STEAM ENGINE,

Packed in Travelling Case for Export.



For long Sea Voyages the Engine is packed in a strong case, and the Wheels, Under-carriage, Pole, Chimney, and Fly-Wheel are sent as separate loose packages.

The above illustration represents a Portable Engine thus packed, as it appears after having been landed at the port of discharge, and mounted on its Wheels ready for inland transport to final destination. The Waterproof Cover, Whippletrees, &c., are got out by removing the boards marked with crosses. To attach the Hind Axles, the boards marked O are taken off. This system of packing obviates the necessity of having to unpack the Engine and put it together immediately on landing.

Approximate Particulars of Full Packing for long Sea Voyages.

Engine with large Fire Box for wood or coal fuel.	Dimensions and Weight of Largest Case containing the Engine and Boiler.				Total Approximate Weight and Measurement.	
	Length.	Width.	Height.	Weight.		
2½ HP.	7ft. 6in.	3ft. 3in.	4ft. 4in.	33 cwt.	44 cwt.	211 cubic ft.
3 ,,	8ft. 7in.	3ft. 3in.	4ft. 4in.	36 cwt.	49 cwt.	240 ,, ,,
4 ,,	8ft. 8in.	3ft. 5in.	4ft. 8in.	43 cwt.	61 cwt.	268 ,, ,,
5 ,,	9ft. 10in.	3ft. 8in.	5ft. 1in.	54 cwt.	72 cwt.	328 ,, ,,
6 ,,	10ft. 4in.	3ft. 9in.	5ft. 6in.	57 cwt.	82 cwt.	380 ,, ,,
7 ,,	10ft. 9in.	4ft. 0in.	5ft. 9in.	67 cwt.	94 cwt.	420 ,, ,,
8 ,,	11ft. 0in.	4ft. 2in.	6ft. 1in.	73 cwt.	101 cwt.	464 ,, ,,
10 ,,	11ft. 3in.	4ft. 5in.	6ft. 5in.	83 cwt.	117 cwt.	526 ,, ,,
12 ,,	12ft. 2in.	4ft. 6in.	6ft. 5in.	92 cwt.	132 cwt.	570 ,, ,,
14 ,,	13ft. 0in.	4ft. 10in.	7ft. 0in.	108 cwt.	149 cwt.	700 ,, ,,
16 ,,	13ft. 3in.	4ft. 10in.	7ft. 5in.	114 cwt.	156 cwt.	735 ,, ,,
20 ,,	14ft. 5in.	5ft. 2in.	7ft. 8in.	143 cwt.	205 cwt.	890 ,, ,,

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HORNSBY'S PORTABLE STEAM ENGINES.

The Boilers of these Engines are made of "Best" and "Best Best" Plates, and proved by hydraulic pressure to 120 lbs per square inch.

The Fire Boxes are of Lowmoor Iron, constructed to burn either Coal, Wood, Straw, or any other kind of fuel.

One of the special features of these Engines is that the Cylinder and Pipes connected therewith are placed *inside* the Boiler or Steam Chamber, by which means they are effectually protected from weather and frost, and all condensation is avoided.

A Fly-Wheel or Pulley can be put on either or both ends of Crankshaft.

The Engine may be worked from full to half-power without reducing the steam pressure or altering the Governors.

The motion of the Engine can be reversed by taking out a single bolt and moving the eccentric sheave half round.

Every Engine will work up to double its nominal Horse Power. The wrought iron Travelling Wheels are provided with loose Bushes, which can be taken out when worn and replaced without interfering with other parts of the Wheels. New Tyres can be put on in the same way when required.

SINGLE CYLINDER PORTABLE ENGINES,

With Waterproof Cover and Fire-Irons all complete.

2½ Horse Power	£105	7 Horse Power	£195
3 „ „	£125	8 „ „	£210
4 „ „	£150	9 „ „	£225
5 „ „	£165	10 „ „	£240
6 „ „	£180		

Link Motion Reversing Gear, 2½ to 3 Horse Power ... ... £ 8 0 0

Do. do. do 4 to 10 „ „ £10 0 0

Extra for Hand Pump, in addition to the usual Pump,

For Engines of 10 Horse Power and under £5 0 0

For Engines of more than 10 Horse Power £6 0 0

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RANSOMES, SIMS, & HEAD'S

PORTABLE STEAM ENGINES.

The Nominal Power of these Engines is calculated at 35 lbs. per square inch, and they may be worked with safety at 80 lbs.

The Boilers are tested by hydraulic pressure to 160 lbs. per square inch, and are covered with wood lagging and sheet iron to prevent radiation of heat.

A Lock-up Safety Valve is always supplied in addition to the ordinary Safety Valve.

The 8-Horse Engine will do full duty with an average consumption of about ½ cwt. of good coal per hour.

The Feed Water is heated by a jet of exhaust steam, which can thus be introduced into the Boiler at a high temperature, by means of a Continuous Action Pump.

A Fly-Wheel or Pulley can be attached to either end of the Crank Shaft.

Sizes of Portable Engines, with Iron or Wood Road Wheels, including Steam Gauge, Waterproof Cover, Tube Brush, Fire Prickers, Rake, Shovel, Spanners, Oil Can, Water Funnel, Spare Gauge Glass, Skid and Chain, Ordinary and Lock-up Safety Valves.

Horse Power.	Number of Cylinders.	Diameter of Cylinder.	Length of Stroke.	Diameter of Fly-Wheel.	Number of Revolutions per minute.	Weight of Engine.	Price.
		Inches.	Inches.				
4	1	6⅞	11	4ft. 3in.	140	60 cwt.	£150
6	1	8¼	12	4ft. 6in.	140	71 cwt.	£180
8	1	9⅜	12	4ft. 8in.	140	86 cwt.	£210
10	1	10	13	5ft. 0in.	140	101 cwt.	£240
10	2	7¾	12	5ft. 0in.	140	109 cwt.	£265
12	2	8¼	12	5ft. 0in.	140	120 cwt.	£305
14	2	9	12	5ft. 0in.	140	130 cwt.	£340
16	2	9⅜	12	6ft. 2in.	140	149 cwt.	£375
20	2	10	13	6ft. 2in.	140	187 cwt.	£450

These Engines can be fitted with extra large Fire Boxes specially adapted for burning Wood and Refuse, at an extra charge per Horse Power, according to size.

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RANSOMES, SIMS, & HEAD'S

SEMI-PORTABLE STEAM ENGINES.

These Engines are of similar construction to the Portable Engines previously described, and are convenient where space is limited.

	Single Cylinders.				Double Cylinders.				
Horse Power.....	4	6	8	10	10	12	14	16	20
Prices	£140	£170	£195	£225	£250	£285	£320	£355	£425

Extra large Fire Boxes for burning Peat, Sawdust, Roots, &c., per Horse Power ... ...extra	£	1	10 0
Expansion Valves per Horse Power ... ...extra	£	1	10 0
Patent Automatic Expansion Gear, including Expansion Valves, per Horse Power ... ...extra	£	3	10 0
Link Motion Reversing Gear for Single Cylinder Engines	£15	0	0
Do. do. do. 10 and 12-Horse Double Cylinder Engines...	£20	0	0
Do. do. do. 14 to 20 „ „ „	£25	0	0

GARRETT'S

SEMI-PORTABLE STEAM ENGINES.

4	Horse Power	Single	Cylinder ...	£140
5	„	„	„ ...	£155
6	„	„	„ ...	£170
8	„	„	„ ...	£195
10	„	„	„ ...	£225

10	Horse Power	Double	Cylinder	£250
12	„	„	„	£285
14	„	„	„	£320
16	„	„	„	£355
20	„	„	„	£425

CLAYTON & SHUTTLEWORTH'S

SEMI-PORTABLE STEAM ENGINES.

2½	Horse Power	Single	Cylinder	£100
3	„	„	„	£120
4	„	„	„	£140
5	„	„	„	£155
6	„	„	„	£170
7	„	„	„	£180
8	„	„	„	£195
10	„	„	„	£225
12	„	„	„	£260

8	Horse Power	Double	Cylinder	£220
10	„	„	„	£250
12	„	„	„	£285
14	„	„	„	£320
16	„	„	„	£355
20	„	„	„	£425
25	„	„	„	£510
30	„	„	„	£610

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RANSOMES, SIMS, & HEAD'S

PATENT PORTABLE STRAW BURNING ENGINE

(HEAD & SCHEMIOTH'S PATENT).

In these Engines a Self-acting Apparatus, with Trough and Rollers, somewhat like a Chaff Cutter, is attached to the Fire Door, and the Straw, Reeds, Sugar Cane, Cotton and Maize Stalks, or any similar materials are drawn into the fire and equally distributed by the Rollers.

One Ton of Straw will produce about the same amount of heat as 4 cwt of coal.

	Single Cylinders.				Double Cylinders.				
Horse Power.....	4	6	8	10	10	12	14	16	20
Prices	£190	£220	£250	£285	£310	£350	£390	£425	£510

GARRETT'S

PATENT STRAW BURNING PORTABLE ENGINE.

The Hopper for Straw Burning is bolted to the Fire Box below the Furnace Door, the Straw being introduced by means of a fork, and thoroughly dried before ignition.

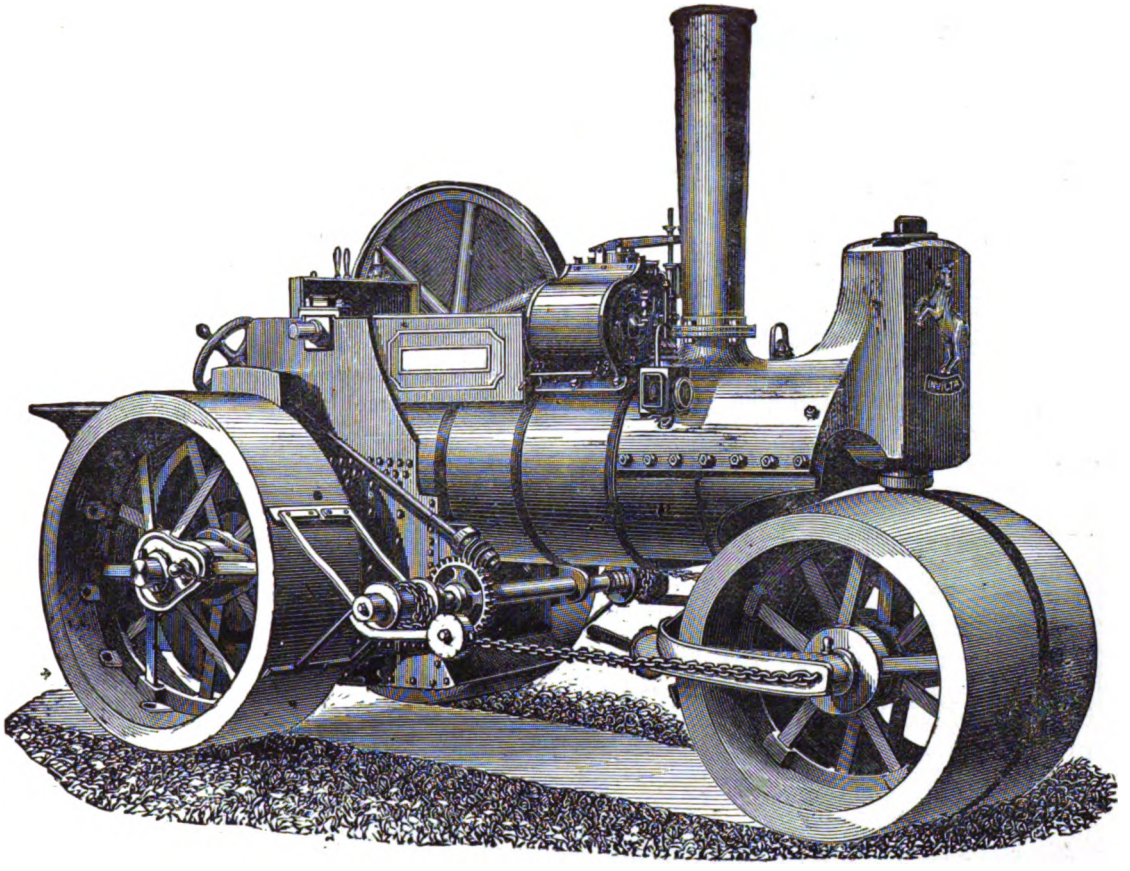
The Grate upon which the combustion takes place is completely surrounded by water space so that the Fire Box is not more liable to burning than with an ordinary coal consuming Boiler.

8 Horse Power Single Cylinder Engine £235 0 0

10 do. do. do. £260 0 0

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AVELING & PORTER'S
STEAM ROAD ROLLER.



This Machine is a special adaptation of AVELING & PORTER'S ordinary Road Locomotive to the purpose of road rolling, and in its design and construction every improvement suggested by long experience has been adopted.

The Engine is carried upon four Rollers of equal widths, as shown in the engraving, the two hind ones acting as Drivers, and the two in front as Steering-Rollers. These latter cover the space between the two Driving-Rollers, and are made slightly conical in order that on the ground line they may run close together while leaving room above their Axle for the Vertical Shaft which connects them to the Engine, and which serves to support the forward part of the Boiler; at the same time play is given to the Vertical-Shaft for the Rollers to accommodate themselves to the curved surface of the road. The Machine can be turned round in little more than its own length, thus enabling it to roll steep hills without injury to Fire Box, while retaining the manifold practical advantages of the Horizontal over the Vertical Boiler for locomotive purposes; amongst which may be enumerated absence of priming, economy in fuel, wear and tear, and much lower centre of gravity. It may be also noted as important features of these Rollers that they are adapted for driving Stonebreakers or other fixed machinery most economically, when not required for rolling. They are managed by one person.

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AVELING & PORTER'S
STEAM ROAD ROLLER
(CONTINUED).

With each Roller the following extras are supplied free of charge: Feed Oil Can, Box Spanner and set of Spanners, Screw-Hammer, 2 Gauge Glasses and Washers, set of Firing Irons, and Tube Brush and Rod.

The usual process of road repairs with the Steam Roller is, after loosening the surface with the spiked rollers, to have it levelled in the customary way, and a layer of from 2 to 6 inches thickness of metalling laid upon a length of about 35 yards. The Roller is passed two or three times over every portion of this length, working its way gradually across from one side of the road to the other, until the flat surfaces of all the stones are brought uppermost. A covering of one inch of sharp clean sand is then spread over the entire surface and well watered from a cart or hose, after which the rolling is continued until the stones are thoroughly bedded, and, as it were, concreted into their places; the surplus sand is then swept off, and the road is left in a finished, durable state. The proportion of sand and water used, varies in different places, different opinions being at present held as to the most desirable proportion for the purpose; but the value of sharp sand in preference to all other kinds of binding material is everywhere recognised, as is also the advantage of laying on no more of this material than suffices to fill up properly the interstices between the stones.

Total Rolling Width	4½ feet	6 feet	7 feet	7½ feet
Do. Weight...	6 tons	10 tons	15 tons	20 tons
Diameter of Driving Rollers	5 feet	4¾ feet	5 feet	5½ feet
Price, with Patent Wrought Iron Brackets ...	£320	£400	£500	£600

A set of Spikes fitted to the outside Rollers, and adapted for lifting old roads before re-metalling, £5 extra.

For general purposes the 10 ton and 15 ton Rollers are most convenient, but where the traffic is very heavy the 20 ton Roller does excellent work.

It is estimated that from 1000 to 2000 square yards can be rolled per day at a cost of from one-third to one-eighth of a penny per yard in England under good management.

For new roads, the following practice is recommended:—"The roadway is excavated, graded, and properly formed to a depth of fourteen inches below the gutters with a cross section conforming to the cross section of the road when finished; it is then thoroughly and repeatedly rolled with the Steam Roller, all depressions being carefully filled and rolled before the stone is put on. On the bed thus formed and consolidated, a layer of stones eight inches thick is set by hand and rammed or settled to place by sledge hammers, all irregularities of surface being broken off and the interstices wedged with pieces of stone. The intermediate layer of broken stone, of a size not exceeding three inches in diameter, is then evenly spread to a depth of four inches and thoroughly rolled, and this is followed by rolling in half an inch of sand. The surface layer of stone, broken to a size not larger than two and a half inches diameter, is then put on to a depth of four inches, thoroughly rolled, and followed as before by sand, also rolled. Finally, a binding of clear sharp sand is then applied, well watered, and most thoroughly rolled with the Steam Roller until the surface becomes firm, compact, and smooth, the superfluous binding material being swept off and removed."

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CLAYTON & SHUTTLEWORTH'S

PORTABLE SINGLE BLAST THRASHING MACHINE,

Without Finishing Screen.

The timber used in the construction of these Machines, which are made of two sizes, is of the best quality and thoroughly seasoned.

The Patent Trussed Frames are made of best English Oak, which combine rigidity and lightness with great lateral strength and elasticity; the Travelling Wheels of wood or wrought iron as preferred.

The Drum is of wrought iron with best tough ash beaters, to which Patent **Rolled Steel** Ribbed Beater Plates are attached, and is protected by a Patent Safety Drum Guard, as required by the Act.

The Drum Spindles are of steel with long bearings, and the Concaves are entirely of wrought iron.

The Riddles and Vibrating Boards are hung on Colson's Patent Spring Hangers which work without friction and require no lubrication.

The Straw Shakers are worked by a Single Crank Shaft; Double Crank Shakers are supplied, if desired, without extra charge.

The Corn is thoroughly thrashed, passed through a Dressing Apparatus and lifted to the top of the Machine by the Elevator; it then passes from the Elevator or Awner into sacks, which are placed on an Elevated Table, so that a man can take them on his back without assistance.

These Machines do not produce the Corn thoroughly cleaned, but by passing it once through a Winnowing Machine it will be well mixed and fit for market.

PRICES:—

Width of Drum.	Small Size.	Large Size.	Power Required.
3 feet 0 inches	£ 85	—	2½ Horse Power
3 feet 6 inches	£ 95	—	3 Horse Power
4 feet 0 inches	£105	£115	4 Horse Power
4 feet 6 inches	£115	£125	5 & 6 Horse Power (respectively)
5 feet 0 inches	£125	£135	7 Horse Power
5 feet 6 inches	—	£145	8 Horse Power

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CLAYTON & SHUTTLEWORTH'S

PORTABLE DOUBLE BLAST THRASHING MACHINE,

Without Finishing Screen.

In these Machines the Corn passes from the Elevator or Awner, as described on previous page, into a **Second Dressing Apparatus,** consisting of a series of Riddles which separate the light and refuse corn from the best quality, and deliver them into separate sacks. A small Fan is also provided for blowing away the Chaff, Beards, &c., rubbed off in the Awner.

This class of Machine is capable of thrashing and thoroughly cleaning large quantities of grain. By removing the Riddles from the Second Dressing Apparatus and stopping the small Fan, the Machine can be used as a "Single Blast."

PRICES:—

Width of Drum.	Small Size.	Large Size.	Power Required.
3 feet 0 inches	£ 95	—	3 Horse Power
3 feet 6 inches	£105	—	4 Horse Power
4 feet 0 inches	£115	£130	5 Horse Power
4 feet 6 inches	£125	—	6 Horse Power
4 feet 6 inches	—	£140	7 Horse Power
5 feet 0 inches	£135	£150	8 Horse Power
5 feet 6 inches	—	£160	10 Horse Power

Wilder's Patent Safety Self-acting Feeding Apparatus can be attached to most Thrashing Machines, ensuring greater regularity of feed and uniformity of speed besides saving both labour and grain.

For Clayton & Shuttleworth's 4ft., 4ft. 6in., and 5ft. Machines £20 0 0

Packing for Export ... ... £ 2 10 0

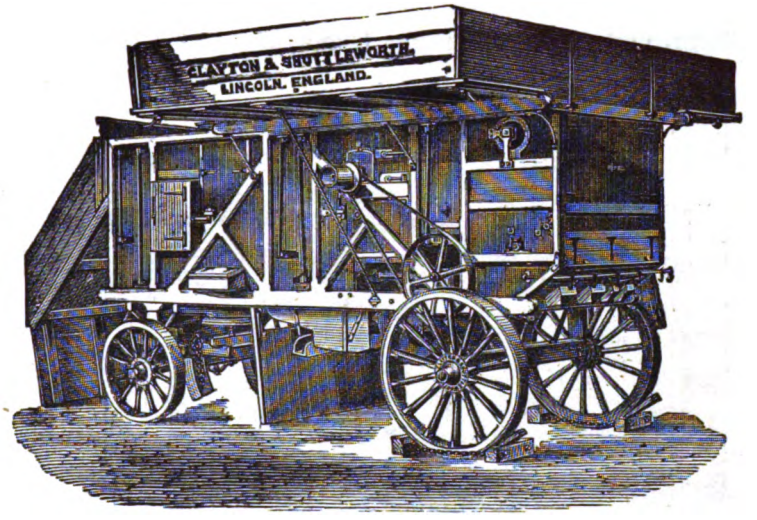
For Clayton & Shuttleworth's 5ft. 6in. Machine £22 0 0

Packing for Export ... ... £ 2 15 0

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CLAYTON & SHUTTLEWORTH'S
PORTABLE FINISHING THRASHING MACHINE,

With Patent Adjustable Screen.



The Corn in the Finishing Machine, as illustrated above, passes from the Second Dressing Apparatus previously described into a Patent Adjustable Rotary Screen which sorts it into three qualities of grain, dressing and finishing the corn perfectly for market in one operation.

These Machines can be used as "Single" or "Double Blasts" at pleasure.

PRICES:—

Width of Drum.	Small Size.	Large Size.	Power required.
3 feet 0 inches	£105	—	3 Horse Power
3 feet 6 inches	£115	—	4 Horse Power
4 feet 0 inches	£125	£140	5 Horse Power
4 feet 6 inches	£135	—	6 Horse Power
4 feet 6 inches	—	£150	7 or 8 Horse Power
5 feet 0 inches	—	£160	8 or 10 Horse Power
5 feet 6 inches	—	£170	10 or 12 Horse Power

The price quoted for each Machine includes Waterproof Cover, small Leather Driving Bands, Chocks and Wedges, Wrenches, Oil Can, Ladder, and Shafts or Pole.

When Engines and Machines are sold together, the Driving Band is supplied "gratis"—but when either are ordered separately, the Band is charged extra.

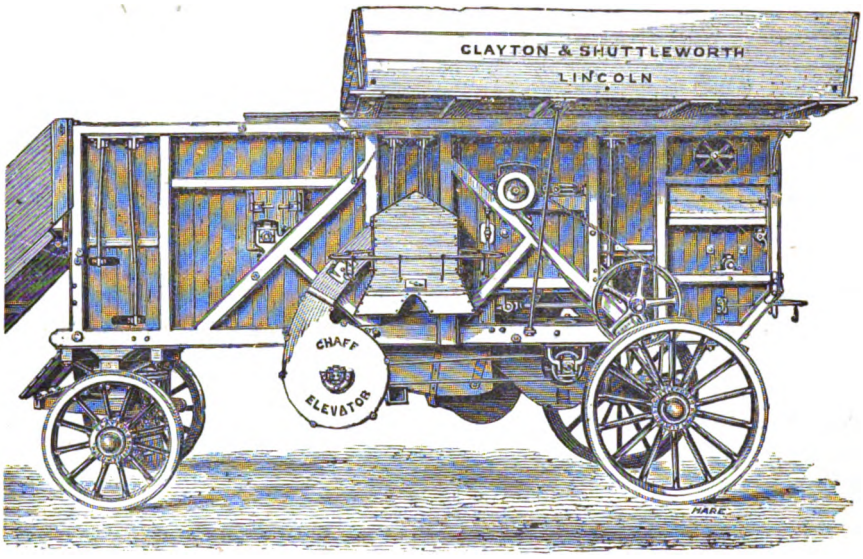
The prices of attaching special apparatus for Thrashing and Dressing Rice, Rape, Spelt, &c., may be obtained on application.

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CLAYTON & SHUTTLEWORTH'S

THRASHING MACHINE,

With Improved Chaff Cleaning, Elevating, and Sacking Apparatus.



For districts where chaff is used as fodder for cattle, the Thrashing Machine should be fitted with the Improved Apparatus for Cleaning, Elevating, and Sacking the Chaff.

It consists of a system of Riddles and Screens, for removing both the heavy and light dust, and of an Elevating Fan, which conveys the Chaff into the Sacking Hopper.

The Chaff passes twice before the Blast and over three Riddles or Screens, on its way to the sacks, and is thus thoroughly cleansed from all extraneous substances.

The thorough separation of the seeds of weeds from the Chaff is of great benefit, as they are thus prevented from being returned to the land in the manure.

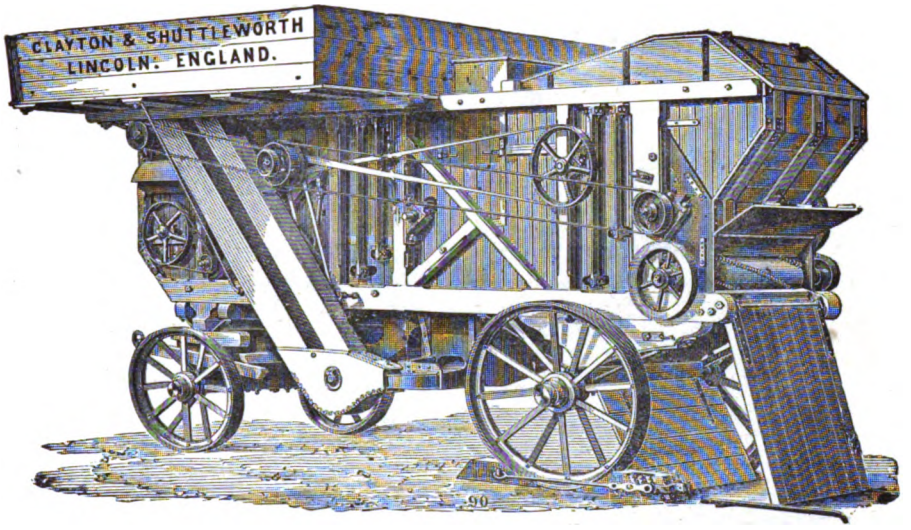
Improved Chaff Cleaner, Elevator and Sacking Apparatus fitted to any size or class of Clayton and Shuttleworth's Machine, £5 extra.

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CLAYTON & SHUTTLEWORTH'S

FINISHING THRASHING MACHINE,

Fitted with Straw Bruising Apparatus.



In the Machine here illustrated, the Straw on leaving the Shaker passes between a series of concaves and rapidly revolving Drums, armed with Cutting Blades and Bruising Teeth, which reduce it to a fit state for cattle food.

This Apparatus has been designed to render the Combined Thrashing Machine available for use in countries where Straw is almost the only winter food for cattle.

	Width of Drum.	Power required.	Price.
Large size Machine	5ft. 0in.	12 Horse Power	£100 extra.
„ „	4ft. 6in.	10 „	£ 90 extra.
Small size Machine	4ft. 0in.	8 „	£ 80 extra.
„ „	3ft. 6in.	6 „	£ 70 extra.

The Straw Bruising Apparatus is also made separately and mounted on a Four-wheeled Carriage. Width 4ft. 6in.

Price	£100 0 0

Separate Riddle for sifting the Bruised Straw as it falls from the Apparatus :—

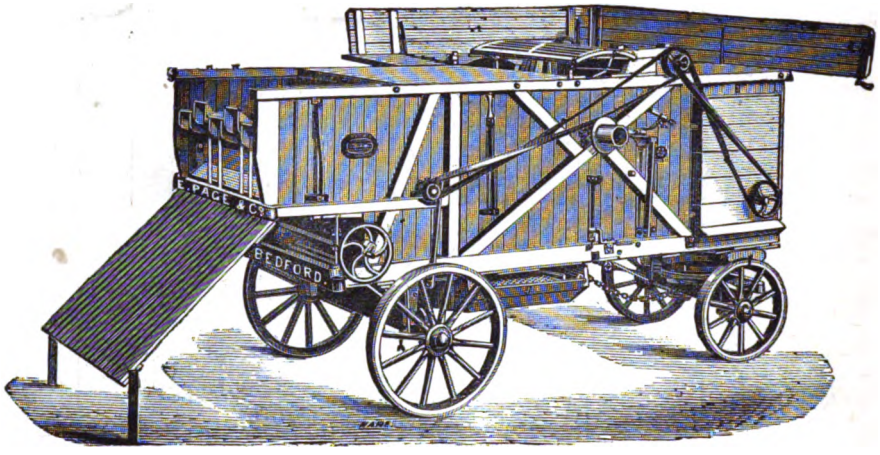
3 feet 6 inches	£18 0 0
Packing for Export	£ 1 7 6
4 feet 0 inches	£18 10 0
Packing for Export	£ 1 9 0
4 feet 6 inches or 5 feet	£19 0 0
Packing for Export	£ 1 10 0

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GARRETT'S
PATENT COMBINED TREBLE BLAST THRASHING AND CORN DRESSING MACHINE,

CLASS A.

FOR FINISHING THE GRAIN FOR MARKET AT ONE OPERATION.



In this Machine only one Fan and Blower is employed from which the necessary blasts of air are conducted through separate channels and brought into contact with the chaff and corn at different points. The pressure of these blasts can be modified by simple valves to suit the grain under operation.

A number of Spindles, Bearings, Pulleys, and Belts, are thus dispensed with, reducing wear and tear, weight, and the power required for working.

Width of Drum.	Power Required.	Class A. Price including Patent Self-Acting Drum Guard.
5 feet 0 inches	10 Horse Power	£160 0 0 (Heavy)
4 feet 6 inches	8 Horse Power	£150 0 0 (Heavy)
4 feet 0 inches	6 Horse Power	£140 0 0 (Heavy)
4 feet 0 inches	5 Horse Power	£125 0 0 (Light)
3 feet 6 inches	5 Horse Power	£130 0 0 (Heavy)
3 feet 6 inches	4 Horse Power	£115 0 0 (Light)

The difference between Heavy and Light Machines consists chiefly in diameter of Drum, surface of Screening and Blowing Sieves, length of Shaker Boxes, and total measurement and weight of Machine.

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GARRETT'S

PATENT COMBINED DOUBLE BLAST THRASHING AND CORN DRESSING MACHINE,

CLASS B.

This Machine is similar in construction to the one described on the preceding page; the only difference of importance being in the Dressing Apparatus.

The Corn is dressed twice, which is found sufficient for all practical purposes in many districts.

Width of Drum.	Power Required.	Class B. With Adjustable Chobber or Cylindrical Aveller and Patent Self-acting Drum Guard.
5 feet 0 inches	10 Horse Power	£145 0 0 (Heavy)
4 feet 6 inches	8 Horse Power	£135 0 0 (Heavy)
4 feet 0 inches	5 Horse Power	£115 0 0 (Light)
3 feet 6 inches	4 Horse Power	£105 0 0 (Light)

Revolving Screen £7 10s. extra.

GARRETT'S

PATENT SINGLE BLAST ROUGH DRESSING MACHINE,

CLASS C.

Width of Drum.	Power Required.	With Elevator and Aveller complete, and Patent Self-acting Drum Guard.
5 feet 0 inches	10 Horse Power	£135 0 0 (Heavy)
4 feet 6 inches	8 Horse Power	£125 0 0 (Heavy)
4 feet 0 inches	5 Horse Power	£105 0 0 (Light)
3 feet 6 inches	4 Horse Power	£ 95 0 0 (Light)

Grimaldi's Patent Straw Chopper attached to any of Garrett's Machines—3 feet 6 inches, £55; 4 feet 0 inches, £65; 4 feet 6 inches, £75; 5 feet 0 inches, £85.

These Straw Choppers can be made Portable and Independent at £10 extra, in each case.

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RANSOMES, SIMS, & HEAD'S

FINISHING THRASHING MACHINES,

With Reciprocating (Box) Shakers.

These Machines will produce a perfectly uniform sample of grain and make all the separations usual in Combined Finishing Thrashing Machines.

Mark.	Width of Drum.	Horse Power Required.	Average Nett Weight.	Average Bushels Thrashed in 10 Hours.	Price.
A 3	5 ft. 0 in.	8 to 10	78 cwt.	700	£160 0 0
A 1	4 ft. 6 in.	6 to 8	74 cwt.	600	£150 0 0
A 9	4 ft. 0 in.	4 to 6	68 cwt.	450	£140 0 0

The Prices include Waterproof Cover, Ladder, Skid, and Chain. Chaff Bagging Apparatus, £5 extra.

Wilder's Patent Self-Acting Feeding Apparatus 5 ft., £23; 4 ft. 6 in., £22; 4 ft., £21 extra.

RANSOMES, SIMS, & HEAD'S

SINGLE BLAST THRASHING MACHINES.

These Machines do not produce a finished sample for market, but they will thrash a large quantity of grain in a short time with moderate power; the corn simply requires to be passed once through a Dressing Machine to make it fit for market.

Mark.	Width of Drum.	Horse Power Required.	Average Nett Weight.	Average Bushels Thrashed in 10 Hours.	Price.
C 3	5 ft. 0 in.	8	68 cwt.	800	£135 0 0
C 1	4 ft. 6 in.	6	63 cwt.	650	£125 0 0
C 9	4 ft. 0 in.	4	58 cwt.	420	£105 0 0

Chaff Bagging Apparatus, £5 extra.

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RUSTON, PROCTOR, & Co.'s

FINISHING THRASHING MACHINES.

The Frames of these Machines are constructed of the best English Oak, strongly braced, and trussed with iron.

The Straw, Pulse, and Chaff are delivered separately at one end of the Machine, while the Corn is delivered at the other.

Drum, 5 feet 6 inches wide, for 12 Horse Engine	£170 0 0
Drum, 5 feet 0 inches wide, for 10 Horse Engine	£160 0 0
Drum, 4 feet 6 inches wide, for 8 Horse Engine	£150 0 0
Drum, 4 feet 6 inches wide, for 6 Horse Engine	£135 0 0
Drum, 4 feet 0 inches wide, for 5 Horse Engine	£125 0 0
Drum, 3 feet 6 inches wide, for 4 Horse Engine	£115 0 0
Drum, 3 feet 0 inches wide, for 3 Horse Engine	£105 0 0

RUSTON, PROCTOR, & Co.'s

DOUBLE AND SINGLE BLAST THRASHING MACHINES.

	Double Blast.	Single Blast.
Drum, 5 feet 6 inches wide, for 12 Horse Engine	£160	£145
Drum, 5 feet 0 inches wide, for 10 Horse Engine	£150	£135
Drum, 4 feet 6 inches wide, for 8 Horse Engine	£140	£125
Drum, 4 feet 6 inches wide, for 6 Horse Engine	£125	£115
Drum, 4 feet 0 inches wide, for 5 Horse Engine	£115	£105
Drum, 3 feet 6 inches wide, for 4 Horse Engine	£105	£ 95
Drum, 3 feet 0 inches wide, for 3 Horse Engine	£100	£ 85

If fitted with Centrifugal Chaff Elevator, £5 extra.

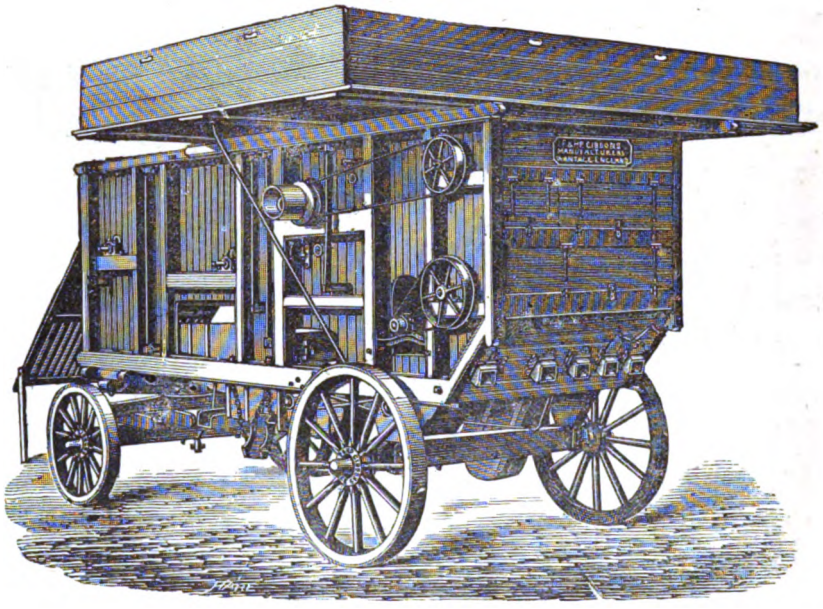
Each Machine is mounted on strong wood or wrought iron Travelling Wheels, with Patent Axles, Arms turned and case-hardened, Locking Gear, with either Pole or Shafts for draught, and supplied with a set of large and small Blast Riddles, two Mahogany Caving Riddles, fixed Blast Riddles, Oil Tin, Screw Hammer, complete set of best Leather Straps, Waterproof Cover, Short Ladder, set of Spanners and set of Chain Chocks, and Wedges for Travelling Wheels.

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P. & H. P. GIBBONS'

THRASHING AND FINISHING DRESSING MACHINE,

FOR PREPARING CORN FOR MARKET IN ONE OPERATION.



Best seasoned English Oak is used for the Frames of these Machines, braced together with wrought iron ; Drums, with wrought iron Heads and round wood Beaters, faced with iron, to which the Patent Grooved Beaters are attached ; wrought iron Concave ; Straw Shakers worked by Single Crank ; Spring Hangers and Cup Elevator ; Adjustable Barley Awner and Patent Adjustable Revolving Screen ; Wood Travelling Wheels.

Prices include Waterproof Cover, small Leather Driving Bands, Oil Can, Ladder, and Draught Pole or Shafts.

The working parts, including the Elevators, are fixed inside the Frame, and are thus protected from the weather and accidents.

Class.	Width of Drum.	Diam. of Drum.	Horse Power Required.	Price.
A	5 feet 6 inches	23 inches	10 or 12	£170
A	5 feet 0 inches	23 inches	8 or 10	£160
A	4 feet 6 inches	23 inches	7 or 8	£150
A	4 feet 0 inches	23 inches	6 or 7	£140
B	4 feet 6 inches	20 inches	5 or 6	£135
B	4 feet 0 inches	20 inches	4 or 5	£125

The following Duplicate Wearing Parts are recommended to be sent with Machines for Export :—

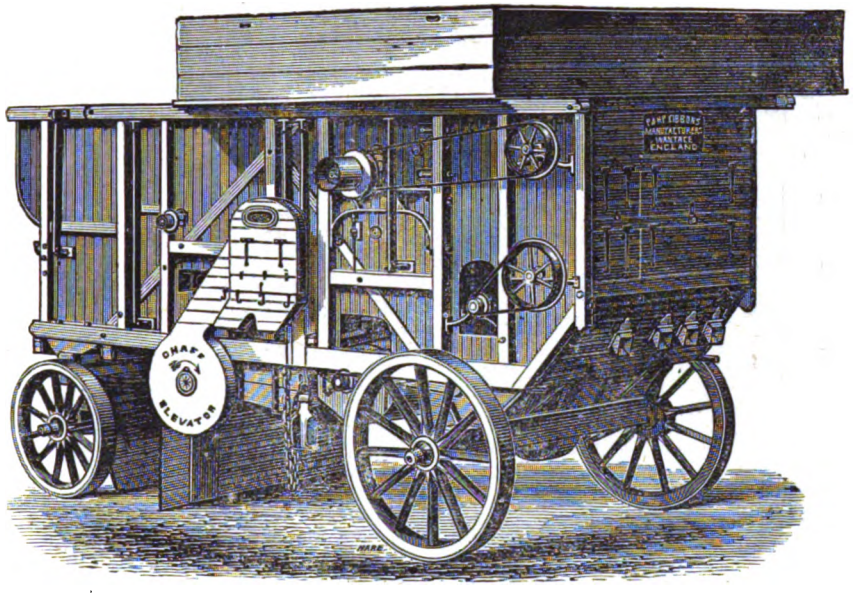
2 Pairs Drum Shaft Brasses,
4 Pairs Shaker Shaft Brasses,
2 Pairs Awner Shaft Brasses,
1 Set of Blower Shaft Brasses,
1 Set of Driving Straps,
1 Set of Riddle Crank Brasses,
1 Set of Patent Drum Beaters.

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GIBBONS'

FINISHING THRASHING MACHINE,

With Improved Chaff Cleaning, Elevating, and Sacking Apparatus.



The above Illustration shows Gibbons' Thrashing Machine with Improved Apparatus attached for Cleaning, Elevating, and Sacking the Chaff.

All the dust and other noxious substances are completely removed from the Chaff, which is then elevated by a Centrifugal Fan to the Chaff Box, and deposited in sacks.

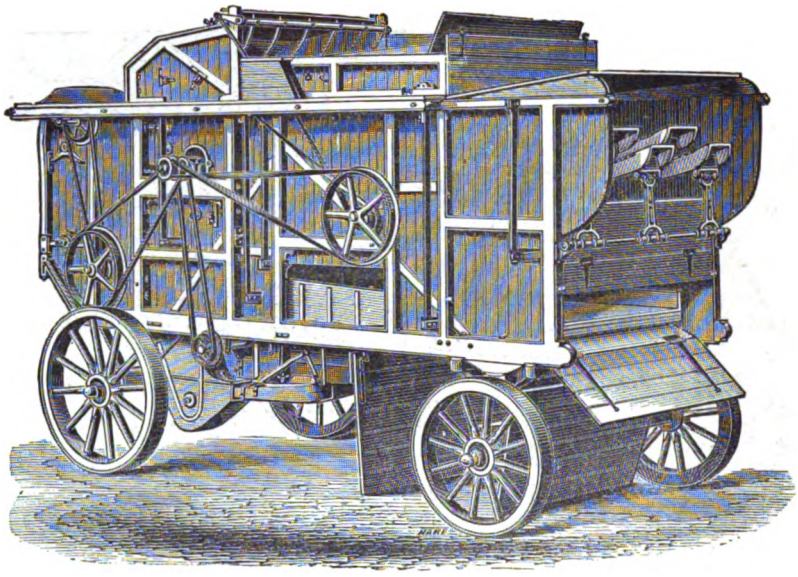
Class.	Width of Drum.	Horse Power.	Price, with Chaff Apparatus.	
			Finishers.	Double Blast.
A	5 feet 6 inches	10 or 12	£175	£165
A	5 feet 0 inches	8 or 10	£165	£155
A	4 feet 6 inches	7 or 8	£155	£145
A	4 feet 0 inches	6 or 7	£145	£130
B	4 feet 6 inches	5 or 6	£140	£125
B	4 feet 0 inches	4 or 5	£130	£120

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GIBBONS'

THRASHING AND FINISHING DRESSING MACHINE,

Fitted with Wilder's Patent Self-Feeding Apparatus.



This Illustration shows a Finishing Thrashing Machine fitted with Wilder's Patent Self-Feeding Apparatus. The Patentee claims the following advantages :—

1st.—It entirely prevents the accidental loss of human life.

2nd.—The Feed can be adjusted as desired: it is perfectly regular, and a greater amount of work can therefore be done in a given time.

3rd.—The regularity of the Feeding ensures perfectly clean Thrashing, effecting a considerable saving in grain.

4th.—Waste is prevented, as the grain cannot fly out.

5th.—A considerable saving in labour is effected, and any ordinary labourer is able to feed the Machine more regularly than it can be done by hand.

6th.—Very little additional power is required to work the Apparatus, and it cannot easily get out of order.

7th.—It can be instantaneously stopped, or set in motion, by means of a handle within easy reach of the band-cutter.

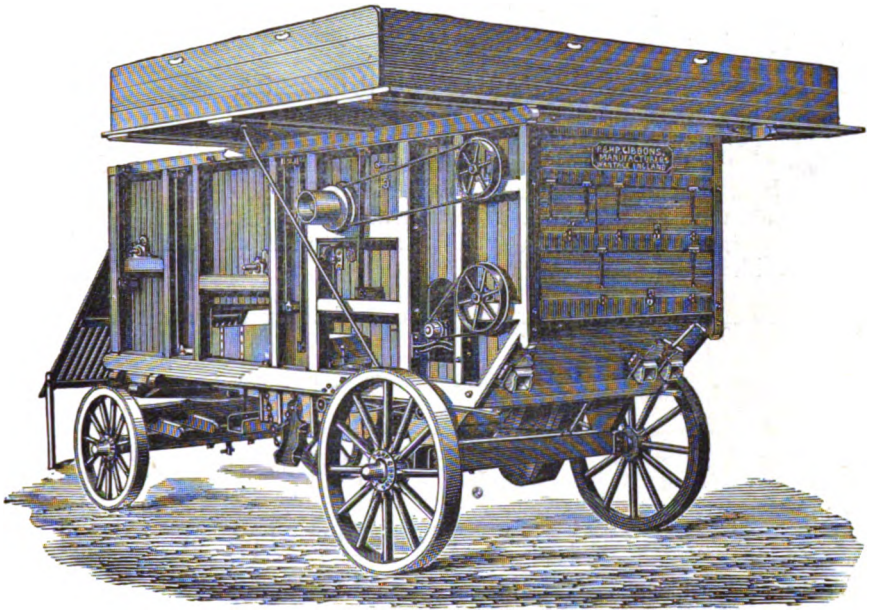
The Price of the Apparatus varies from £20 to £30, according to the size of the Machine, and other circumstances.

It can be fitted to any new Machine at the time of manufacture, or attached to any old one of suitable make.

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GIBBONS'

COMBINED DOUBLE BLAST THRASHING AND DRESSING MACHINE.



The above Machine is well adapted for doing a large quantity of work.

The Straw, Pulse, and Chaff are all delivered separately at one end of the Machine, while the Corn is delivered at the other, and sacked in a cleanly manner by the man without risk of danger from running straps.

The construction of the Machine is similar to that of the Finishing Machine—minus the Patent Separating Screen— and the processes actually performed are quite as effectual.

Class.	Width of Drum.	Horse Power.	Price.
A	5 feet 6 inches	10 or 12	£160 0 0
A	5 feet 0 inches	8 or 10	£150 0 0
A	4 feet 6 inches	7 or 8	£140 0 0
A	4 feet 0 inches	6 or 7	£125 0 0
B	4 feet 6 inches	5 or 6	£120 0 0
B	4 feet 0 inches	4 or 5	£115 0 0

The Duplicate Parts recommended to be sent with Machines for Export, are the same as mentioned on page 536.

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INNES' SAFETY DRUM GUARD

(HUNT'S PATENT).

This Guard is provided with a Hood and Shutter; a sensitive Spring and Lever arrangement causes the Shutter to slide horizontally over the Drum mouth, as soon as any extraneous pressure or weight is put upon the Feed Board or other parts.

The following points are claimed for this Guard :—

1st.—It in no way interferes with the Feeding of the Machine.
2nd.—It acts instantaneously.
3rd.—It is self-acting in all parts.
4th.—It guards the Drum Mouth completely round, thus by it the ends of Drum Mouth where the most danger is, are as efficiently guarded as the back and Feed Board side of Beaters, but still in such a manner as not to interfere with the feeding in the least.
5th.—It is nearer the Beaters than any other, and therefore much more likely to save life and limb in case of accident.

It can be fixed to any make of Drum, and the cost of fixing will compare favourably with any other.

Price £3, exclusive of fixing.

FISON'S

PATENT SAFETY DRUM GUARD.

In this Drum Guard, the Feed Board is balanced by an adjustable weight, and connected by chains to a Guard Roll, so arranged that when any unusual weight comes upon the upper or front part of the Feed Board, the rear part of the Feed Board is raised and the Guard Roll at the same time lowered to meet it, entirely closing the Drum Mouth.

The Guard Pulleys over which the chains pass revolve on Studs fixed in Slots in the Brackets, so that the Feed Board can be set at different inclinations.

Price £3, exclusive of fixing.

PAMPLIN'S

PATENT SAFETY DRUM GUARD.

This Guard consists of a Hood and Self-acting Flap, hinged at the bottom, constructed so that when any one falls on the Hood or Feed Board, the Flap instantly closes.

Price £5, exclusive of fixing.

MAYNARD'S

PATENT SAFETY DRUM GUARD.

This Guard is Self-acting, effectually and instantaneously closing the Mouth of the Drum as soon as the Feeding is intermitted.

Price £1 10s., exclusive of fixing.

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HUNT & TAWELL'S

THRASHING MACHINES,

FOR HAND AND HORSE POWER.

CLASS A.

The Drum of these Machines is on the principle known as the "Peg Drum" and consists of an iron Cylinder fitted with wrought iron Spikes; the Concave has similar projecting Spikes.

By these means the Corn is thoroughly thrashed and falls down with the Straw.

A1. For Hand Power, 18 inch Drum £10 0 0
Heavy Fly-Wheel... ... ...extra £ 1 12 6
A2. With Spur Wheel and Pinion to be driven direct from the Horse Gear... £ 9 10 0
A3. With Pulley, to be driven with Intermediate Motion and Strap ... ... £ 8 0 0

Straw Shakers for A1, A2, and A3 Machines.

5 feet long ... . £2 10 0 8 feet long £4 5 0

A5. Same as A2, with Spur Wheel and Pinion, but with 27 inch Drum ... £11 15 0
A6. Same as A3, with Pulley, 27 inch Drum £10 5 0
Bevil Intermediate Motion ... ... £ 3 0 0
A7. Similar to A6, but with Bevil Wheels attached to the Machine, thus dispensing with the separate Intermediate Motion £15 0 0

Straw Shakers for A5, A6, and A7 Machines.

5 feet long ... ... £3 5 0 8 feet long £5 0 0

CLASS C.

HORSE POWER THRASHING MACHINES.

The Drums of these Machines are fitted with Goucher's Patent Beaters. The Concaves are of wrought iron.

PRICES:—

Fitted with Spur Wheel and Pinion for driving direct from the Horse Gear.

C1. With 24 inch Drum ... £20 0 0 C3. With 36 inch Drum ... £25 0 0
C2. With 30 inch Drum ... £22 10 0 C4. With 42 inch Drum ... £27 10 0

Fitted with Pulley instead of Spur Wheel and Pinion.

C1. With 24 inch Drum ... £18 10 0 C3. With 36 inch Drum ... £23 10 0
C2. With 30 inch Drum ... £21 0 0 C4. With 42 inch Drum ... £26 0 0

If mounted on 2-wheel Carriage, with cast iron Wheels, extra £6 10s.

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MURRAY'S
"TINY" THRASHING MACHINES,

For Hand, Pony, or Horse Power,

The Small Machines, No. 1, are made entirely of Iron and are well adapted for hot climates. They are simple, compact, efficient, and durable, and very suitable for new countries where transport is difficult and costly.

The Sheaves have to be put into the Machine corn end first.

Number of Machine.	No. 1.	No. 1.	No. 2.	No. 2.	No. 3.	No. 3.
Power.	Hand or Pony Spur Gear.	Hand and Pony Spur Gear.	Hand or Horse Spur Gear.	Pulley, Belt, & Intermediate Motion.	Pulley for 2 Horse Power and Revolving Shakers.	Spur Gear for 2 Horse Power and Revolving Shakers.
Approximate Bushels per hour	10	10	14	16	24	24
Price of Machines	£ 6 10	£ 8 8	£ 8 8	£ 7 10	£18 18	£19 19
Price of Horse Gear	£ 7 0	£ 7 0	£10 10	£ 9 0	£12 0	£14 14
Intermediate Motion, Pulleys and Belts	—	—	—	£ 3 10	£ 5 0	—
Shakers, when required ...	—	£ 3 0	£ 3 10	£ 3 10	Always made with Revolving Shakers.	
Price complete	£13 10	£18 8	£22 8	£23 10	£35 18	£34 13

Extra Pole to Pony or Horse Gear, 20/- to 25/- extra.

Spur Gears are only suitable when the Horse Gear can be placed nearly on the same level as the Thrashing Machine; when a Pulley, Belt, and Intermediate Motion are used, the Horse Gear can be fixed in any position.

Crank Shakers when required must be ordered with the Machines; they cannot be attached to the Ordinary Machines.

Approximate Weights and Measurements, Packed for Exportation.

	Approximate Measurement. Cubic Feet.	Gross Weight. Cwt. qrs. lbs.	Nett Weight. Cwt. qrs. lbs.
No. 1, ...	23	3 3 0	2 3 0
No. 2, Spur Gear	27	4 2 0	3 1 20
No. 2, with Pulley	26	4 1 0	3 0 0
No. 2, with Shaker	39	5 2 12	4 0 0
No. 3, ...	100	7 3 0	5 3 0

	Cubic Feet.	Cwt. qrs. lbs.
Pony Gear, ...	23	4 3 20
Intermediate Motion	4	1 0 0
1 Horse Gear	39	8 1 0
Intermediate Motion	7	1 1 0
2 Horse Gear	54	10 0 0

Packing in Shell Cases, from 6d. to 9d. per cubic foot according to strength.

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SMITH'S

PATENT STREET SWEEPING MACHINES.

These Machines are very effective for Street Sweeping, one horse and man being able to sweep about 15,000 square yards of surface per hour.

They are of simple construction, the wear and tear being confined almost entirely to the "bass" of the Brush, and they are equally efficient on pavement or macadam.

Price, at the Works £30 0 0

Brushes, £2 15s. per set; Chains, £1 3s. each; Chain Pulleys 10/- per pair.

Directions for Use.

1.—See that the Shafts are put at such a height that the Frame of the Machine will be perfectly level.

2.—In sweeping, start down the centre of the road and return on the left side of the part swept, taking the *delivered* mud or dust on the way.

3.—Always turn to the left, and raise the brush in going round.

4.—To increase or decrease the pressure of the Brush on the ground, slide the balance weight backwards or forwards.

5.—When not required to sweep, in moving along the road, throw the Brush out of Gear by raising the Catches on the outside Wheels.

6.—Keep the Bearings well oiled and the Chain and Bevil Wheels well greased.

SMITH'S

PATENT LAWN SWEEPING MACHINE.

This Machine can be worked by Hand Power or a Pony. It sweeps three feet wide, and can clear 7,000 square yards of surface per hour.

It is admirably adapted for Park Drives, Lawns, &c.

Price, at the Works £11 0 0

If fitted with Shafts for a Pony, £1 extra.

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TREE GUARDS.

These Tree Guards are strong, light, and elegant in appearance. They are easily fixed, being made in two parts, connecting by bolts and nuts.

	Price at Works.
No. 1. Wrought Iron Tree Guard, 5 feet high, 2½ feet diameter, curved outwards at the top, with Horizontal Bars	£0 15 0
No. 2. Wrought Iron Tree Guard, 6 feet high, 2½ feet diameter, curved outwards at the top, with Spiral Bars instead of Horizontal...	£0 18 0
No. 3. Wrought Iron Tree Guard, 6 feet high, 2 feet diameter in centre, curved outwards at top and bottom...	£1 1 0
No. 4. Wrought Iron Tree Guard, 5 feet high, 2½ feet diameter, Perpendicular Bars, curved outwards at the top	£1 4 0
No. 5. Wrought Iron Tree Guard, 5 feet high, 2½ feet diameter at bottom, Conical Shape, with Vertical Bars, curved outwrdas at the top	£1 0 0

The following Tree Guards are made like ordinary Iron Hurdles:—

No. 6. Strong Wrought Iron Tree Guard, 4 feet high, 5 feet diameter	£1 2 0
No. 6. Strong Wrought Iron Tree Guard, 4 feet high, 4 feet diameter	£0 19 6
No. 7. Strong Wrought Iron Tree Guard, 4½ feet high, 4 feet diameter	£1 6 0
No. 7. Strong Wrought Iron Tree Guard, 5 feet high, 5 feet diameter	£1 9 0

The No. 7. Tree Guards are the most useful against cattle, being curved outwards at the top.

Light Wrought Iron Tree Guards for Streets and Roads in Towns.

No. 6A. Light Wrought Iron Tree Guard, 6 feet high 12 inches diameter, Round Bars	£0 12 0
No. 7A. Light Wrought Iron Tree Guard, 6 feet high, 12 inches diameter, Flat Bars	£0 12 6

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BURNEY'S

WROUGHT IRON CATTLE TROUGHS.

Cattle Trough, with Undamageable Registered Safe Edge, 200 gallons	£4	10	0
Do. do. do. do. 150 „	£3	10	0
Do. do. do. do. 125 „	£3	0	0
Do. do. do. do. 100 „	£2	10	0
Wrought Iron Cattle Trough, with Registered Safe Edge, 3 feet long, 16 inches deep, 18 inches wide	£1	12	6
Service Box ... ...extra	£0	12	6
Wrought Iron Trough, Registered Edge, 4ft. long, 16in. deep, 18in. wide... ...	£1	19	0
Do. do. do. 5ft. long, 16in. deep, 18in. wide... ...	£2	6	6
Do. do. do. 6ft. long, 16in. deep, 18in. wide... ...	£2	13	0
Do. do. do. 7ft. long, 16in. deep, 18in. wide... ...	£3	0	0
Do. do. do. 8ft. long, 16in. deep, 18in. wide... ...	£3	6	6
Do. do. do. 9ft. long, 16in. deep, 18in. wide... ...	£3	13	6
Do. do. do. 3ft. long, 13in. deep, 18in. wide... ...	£1	7	6
Do. do. do. 4ft. long, 13in. deep, 18in. wide... ...	£1	14	6
Do. do. do. 5ft. long, 13in. deep, 18in. wide... ...	£2	1	0
Do. do. do. 6ft. long, 13in. deep, 18in. wide... ...	£2	8	6
Do. do. do. 7ft. long, 13in. deep, 18in. wide... ...	£2	15	6
Do. do. do. 8ft. long, 13in. deep, 18in. wide... ...	£3	1	6
Do. do. do. 9ft. long, 13in. deep, 18in. wide... ...	£3	8	0
Do. do. do. 5ft. long, 16in. deep, 24in. wide	£2	12	6
Do. do. do. 6ft. long, 16in. deep, 24in. wide... ...	£3	5	0

Circular Drinking Pans for Cattle, with Safe Edge.

250 Gallons	£5	0	0
175 Gallons	£4	0	0
100 Gallons	£2	15	0

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SAMUELSON'S

IMPROVED GARDNER'S PATENT TURNIP CUTTERS,

TO CUT THE LAST PIECE, AND WITH IMPROVED DIRT SEPARATOR.



Single Action Cutters—

With 30 Knives, each cutting $\frac{3}{4}$ of an inch wide, and $\frac{1}{2}$ an inch thick, or if specially ordered $\frac{5}{8}$ thick—for Sheep	£4	10	0
Ditto Ditto, if with Wheels and Handles to move about easily, ...extra	£0	10	0
With 14 Knives, each cutting pieces $1\frac{1}{2}$ inches wide and $\frac{5}{8}$ of an inch thick—for Cattle...	£4	10	0
Single Action 6-Knife Slicer for Cattle, with Slicing Knives only, cutting $\frac{5}{8}$ of an inch thick	£4	10	0
Single Action 4-Knife Slicer for Cattle...	£4	10	0

Double Action Cutter—

Cutting for Sheep and Cattle. Has 30 Knives for cutting finger pieces, each $\frac{1}{4}$ of an inch wide and $\frac{5}{8}$ thick—for Sheep ... ... And Slicing Knives for cutting Slices $\frac{5}{8}$ of an inch thick, the whole width of the Turnip—for Cattle	£5	10	0

Any of the foregoing may be had mounted on Wheels, and with Handles so that a boy can move them unassisted in the field, 10/- extra.

The merits of the Patent Gardner Turnip Cutter have been so long recognized that any detailed description of the Machine is unnecessary.

MOODY'S

PATENT ROOT GRATER.

This Machine cuts the Roots by means of Gouge-shaped Steel Knives into ribands, suitable either for mixing with cut hay or straw, or for giving to Sheep without mixing. The cut stuff falls into the interior of the barrel, and is discharged at the end by rolling down the incline of the barrel. The Gouge Knives are made in two sizes,—one for cutting coarse ribands for sheep 1 inch wide by about $\frac{3}{8}$ inch thick; the other finer ribands for lambs $\frac{5}{8}$ inch wide by $\frac{1}{4}$ inch thick.

No. 1. Coarse, for Sheep	£4	10	0
No. 2. Finer, for Lambs...	£4	10	0

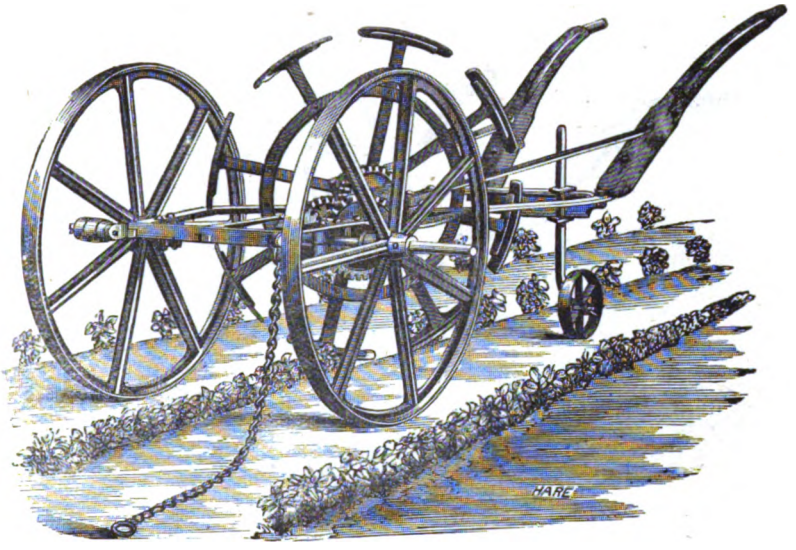
If with Wheels and Handles, extra, 10/-.

The appearance of this Machine is similar to that of Gardner's Turnip Cutter.

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SMITH'S

IMPROVED PATENT ONE-ROW TURNIP THINNER.



This Implement is made principally of iron, and consists of a Rectangular Frame, carrying a Revolving Cutter driven from the Travelling Wheels by means of Gearing.

The Spokes of the Cutter Wheel are armed with Knives, set at an angle of about 45° to the line of draught.

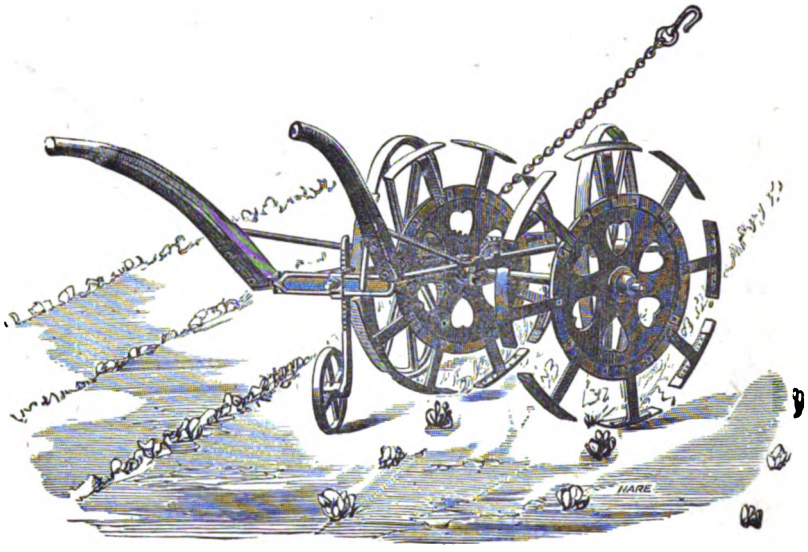
The Thinner will work on Ridge or Flat, and will set out Mangold Wurtzel in bunches twelve inches apart, leaving them sixteen inches when singled; and Turnips nine inches apart, leaving them twelve inches when singled.

Price of Patent One-Row Turnip Thinner £6 10 0

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SMITH'S

PATENT TWO-ROW TURNIP THINNER.



By means of this Implement, two rows of Turnips or Mangold Wurtzel can be bunched at once leaving them from twelve to fourteen inches apart, either on the Ridge or Flat

The Cutter Wheels are 28 inches diameter and carry eight Knives each.

Where the crop is thin or irregular, the handles can be raised, and the Cutters carried clear of the plants. The depth of cutting is regulated by a small Guide Wheel, and the Travelling Wheels are easily adjusted to the width of the rows.

Price of Patent Two-Row Turnip Thinner £8 10 0

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HILLMAN & HERBERT'S
"PREMIER" DHF. BICYCLE
(DOUBLE HOLLOW FORK).



In this Machine the Front Fork is constructed of four lengths of cold drawn Steel Tube, (two on each side of the wheel,) secured at the bottom in lugs, to which the bearings are pin jointed. The upper part is connected by two Bridges or plates, which form (with that part of the tubes between them,) what is generally known as the Head of the Machine; these Bridges also carry the pivots upon which the Backbone is hinged, and the top one also forms the Handle Bracket. The Handle Bar is of best steel. The Wheels are made with from 60 to 80 spokes, Parallel Bearings, Adjustable Cranks, U Steel Felloes, and pure Pará Tires. All Bearings are *Flint Hard.*

PRICES:—

Painted in 3 Colors, with best Buffalo Horn Handles, Detachable Cranks, (Roadster or Racer).

Front Wheel.		Front Wheel.	
42 inches	£14 10 0	52 inches	£15 10 0
44 inches	£14 10 0	54 inches	£16 0 0
46 inches	£14 10 0	56 inches	£16 10 0
48 inches	£14 10 0	58 inches	£17 0 0
50 inches	£15 0 0	60 inches	£17 10 0

EXTRAS.

Ball Bearings to Front Wheel ...	£1 0 0	Half Bright including Fork, Head and Neck, Brake and Foot Rests, Cranks, Spring, Handle Bar and Back Fork Ends ...	£0 15 0
,, ,, Back ,, ...	£1 0 9		
Brake, Lever, Spoon	£0 10 0		
Foot Rests	£0 10 0		
All Bright with Gilded Felloes ...	£1 10 0	Nickel Plating all over except Felloes	£6 0 0
All Bright Felloes	£0 10 0	Ivory Handles	£1 10 0

1,172 miles has been covered in six days by G. Waller on one of these Machines, beating the best previous record by 111 miles.

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HILLMAN & HERBERT'S

"PREMIER" BICYCLES.

The Patent "Premier" No. 1.

The speciality of this Machine is the Front Fork, which is braced up on the suspension principle, by a neat arrangement of steel rods in front. The junction of the rods forms a holder for the Front Roller Break, which is both effective and safe.

The Steering Arrangement is upon the centre principle, and can be adjusted with the greatest ease and precision. The Head which carries the Pivots, is a solid forging with the Fork.

The Neck runs up into a solid part of the Head, thereby relieving the top or adjustable centre of all strain.

The patent Back Wheel Pin, with adjustable cones, will be found of great advantage, as the wheel cannot by any possibility lock or get out; both ends of the Back Fork are solid, *i. e.*, not slotted, neither has the Fork to be sprung out to admit or take out the wheel, as in the case of all other back wheel cone arrangements.

Prices of the Patent "Premier," No. 1.

Painted in Three Colors, Road or Racing.

Diameter of Front Wheel		Diameter of Front Wheel.	
42 inches	£14 0 0	52 inches	£15 0 0
44 inches	£14 0 0	54 inches	£15 10 0
46 inches	£14 0 0	56 incnes	£16 0 0
48 inches	£14 0 0	58 inches	£16 10 0
50 inches	£14 10 0	60 inches	£17 0 0

Complete with Saddle, Brake, Pocket Oil Can, Spanner, and Foot Rests, with Bright Cranks, Spring, Stay Rods, Hubbs, Spokes, Handle Bar, and Bracket. Half Bright 20/- extra; All Bright 30/- extra. The new Ball Bearings to Front Wheel, 20/-; Back Wheel, 20/-

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The "Premier" No. 2.

Prices Painted in Three Colors.

Diameter of Front Wheel.		Diameter of Front Wheel.	
44 inches	£10 0 0	54 inches	£12 10 0
46 inches	£10 10 0	56 inches	£13 0 0
48 inches	£11 0 0	58 inches	£13 10 0
50 inches	£11 10 0	60 inches	£14 0 0
52 inches	£12 0 0		

Complete with Saddle, Pocket Oil Can, Spanner, Bright Cranks, Spring, Hubbs, Spokes, Handle Bar, and Bracket. Extras—Hubbs, Cranks, and Bearings same as No. 1, 10/6, Ball Bearings to Front Wheel, 30/-; to Hind Wheel, 25/-; Brake, 10/-; Foot Rests, 5/-

No. 2 has the same Head and Neck as No. 1, but the bearings of the front wheel are adjustable cones; the stay rods and brake are omitted; felloes of V steel with bevelled edges, and pure rubber tires; but the whole Machine is strong, and calculated to stand any amount of rough work. The workmanship and material are of the highest quality. Its extreme simplicity enables it to be offered at a less price than the No. 1. It has the same Back Wheel Pin, Spring, Pedals, Lubricators, &c.

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HILLMAN & HERBERT'S

"PREMIER" BICYCLES.

The "Premier" No. 3.

Prices, Painted in Three Colors, for Road or Racing.

Front Wheel.		Front Wheel.	
42 inches	£12 10 0	52 inches	£14 0 0
44 inches	£12 10 0	54 inches	£14 10 0
46 inches	£12 10 0	56 inches	£15 0 0
48 inches	£13 0 0	58 inches	£15 10 0
50 inches	£13 10 0	60 inches	£16 0 0

The guiding arrangement of the above Machine is in principle similar to the two preceding, but differs somewhat in construction, the head being cylindrical, with an aperture in front of sufficient size to admit the neck, and allow the front wheel being turned in guiding. The spring is the ordinary bow, but the patent "Premier" can be fitted if desired, without further charge. The bearings of the front wheels are cones, and the brake acts upon the front or hind wheel, as may be preferred. Other parts of this Machine not referred to, are same as No. 1.

Front Wheel Ball Bearings, 30/-; Back Wheel Ball ditto, 25/-.

The Wheels of all these Machines are upon the Spider principle, with Nipples and Hexagonal Lock Nuts, Spokes of a special quality of mild steel, and crescent or V section Felloes of Bessemer steel. The Tires and Pedal Rubbers are of pure Pará rubber.

BOYS' BICYCLES.

These are of the same pattern as the No. 2, and of the best material and workmanship, and are made with 36, 38, and 40 inch wheels only.

Length of leg, inside measurement to sole of foot.	Front Wheel.	Price.
25 inches	36 inches	£7 0 0
26 inches	38 inches	£7 0 0
27 inches	40 inches	£7 0 0

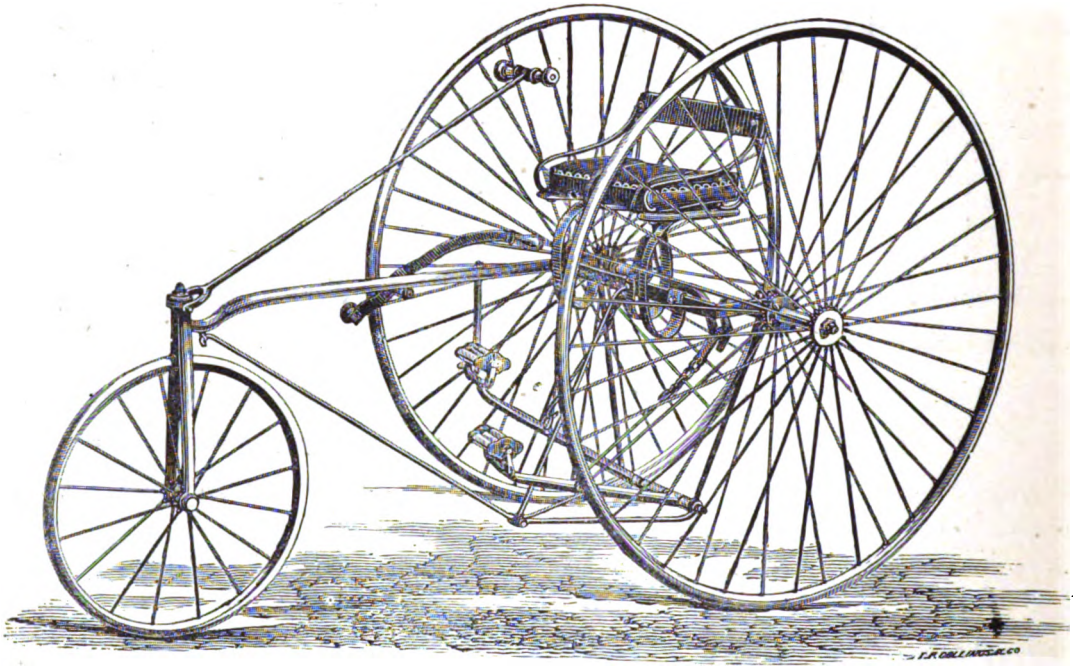
Complete with Saddle, Spanner, Oil Tin, and Lubricators.

Brake, 10/- extra; Folding Foot-rests, 5/- extra.

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HILLMAN & HERBERT'S

"PREMIER" TRICYCLE.



The "Premier" Tricycle has two large wheels, usually from 46 to 50 inches diameter (one of which is the driver) and one small guiding wheel, 22 inches diameter. The large wheels are mounted upon a Double Throw Crank Axle, running in Anti-Friction Roller Bearings, bolted to a horizontal rectangular frame, which forms the main frame work of the Machine.

To it are fixed three C Springs which support the Seat, while two rods extend downwards towards the ground and carry a bar upon which the Pedal Levers are pivoted.

The Guiding Wheel runs upon an adjustable Double Coned Pin in an upright Fork, about four feet in advance of the before mentioned Axle, and in a line midway between the large wheels of the Fork; the Guiding Handle is pivoted in such a manner, as to permit of its being reversed or turned over to draw the machine along when mounting a steep hill.

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HILLMAN & HERBERT'S

"PREMIER" TRICYCLE

(CONTINUED).

The connection between the main body of the Machine and the Guiding Wheel, is of stout tube, curved entirely out of the way of the feet and legs, thereby adapting it to the requirements of ladies as well as gentlemen.

The Pedals are cushioned with india rubber, and the Levers are pivoted upon a steel bar, suspended as before described, from the main frame, directly under the Axle, and as near the ground as perfect immunity from contact with projections thereon will permit.

The connection between Pedal Lever and Crank, is adjustable to suit different lengths of leg.

The Felloes of the Wheels are U shaped steel, and the Tires of Parà Rubber.

A Step is conveniently placed on the right side for mounting, and dismounting, and a powerful Lever Brake with Roller, is arranged to act on the Driving Wheel in descending hills.

A large quantity of luggage can be carried at the back of Seat.

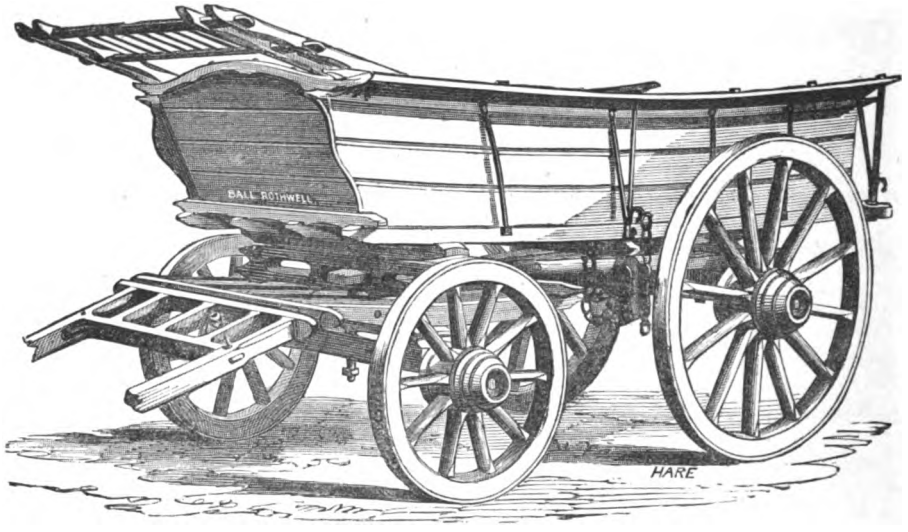
Prices of the Patent "Premier" Tricycle.

Diameter of Large Wheels.		
	To Seat One Person.	
44 inches	£16	0 0
46 inches	£16	10 0
48 inches	£17	0 0
50 inches	£17	10 0
	To Seat Two Persons.	
44 inches	£20	10 0
46 inches	£21	0 0
48 inches	£21	10 0
50 inches	£22	0 0

Painted in 3 Colors. Spanner and Oiler are supplied with each Machine.

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BALL'S WAGONS.



Light Wagon, with narrow Wheels, 2½ inches by ⅝ inch Tire	£35	0	0
General Purpose Wagon, extra strong, with Wheels 3 inches by ¾ inch Tire ..	£37	0	0
General Purpose Wagon, extra strong, with Wheels 4 inches by ⅝ inch Round Sole Tire	£39	0	0
General Purpose Wagon, with Wheels 4½ inches by ⅝ inch Round Sole Tire...	£41	0	0
Double Shafts ... ...extra	£ 2	0	0
Deep Boards all round, very strong ... ... ,,	£ 2	0	0
Hind Ladder, Lock and Drag Chain ... ... ,,	£ 1	0	0
Improved Break ... ... ,,	£ 3	10	0

These Wagons are of good construction, and the materials and workmanship of best quality.

CROSSKILLS' WAGONS.

Light Wagon to carry 3 tons, Tire 2½ inches wide	£36	0	0
Strong Wagon to carry 4 to 5 tons, Tire 3 inches wide	£40	0	0
Strong Wagon to carry 6 tons or upwards, Tires 3 inches wide	£43	0	0
Patent Axles and Oil Boxes... ... ...extra	£ 2	10	0
Improved Double Break ... ... ,,	£ 4	0	0
Drag Chain and Shoe ... ... ,,	£ 1	10	0
Double Shafts ... ... ,,	£ 2	0	0
High Side and End Boards ... ... ,,	£ 3	0	0
Harvest Ladders ... ... ,,	£ 1	10	0

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BRISTOL FARM WAGON.

This Wagon is strong and light in draught and will turn in its own space. Framing of Oak, Sides and Bottom of Elm, fitted complete with Front and Back Hay Ladders.

No. 0.	Wagon to carry 1½ tons, 2½ inch Wheels	£29	10	0
No. 1.	Wagon to carry 2 tons, 2½ inch Wheels	£33	10	0
No. 2.	Wagon to carry 2½ tons, 3 inch Wheels	£37	0	0
No. 3.	Wagon to carry 3 tons, 3½ inch Wheels	£41	10	0
No. 4.	Wagon to carry 4 tons, 4½ inch Wheels	£45	0	0
No. 5.	Wagon to carry 4 tons, 6 inch Wheels	£48	0	0

MILLERS' WAGON.

Fitted with Springs and Patent Axles, specially adapted for Millers' work and for general sack hauling.

No. 1.	Body 8 feet by 3 feet 6 inches, to carry 1 ton	£33	10	0
No. 2.	Body 9 feet by 3 feet 8 inches, to carry 1½ tons	£38	0	0
No. 3.	Body 10 feet by 4 feet 0 inches, to carry 2½ tons	£42	0	0
No. 4.	Body 11 feet by 4 feet 4 inches, to carry 4 tons	£47	0	0

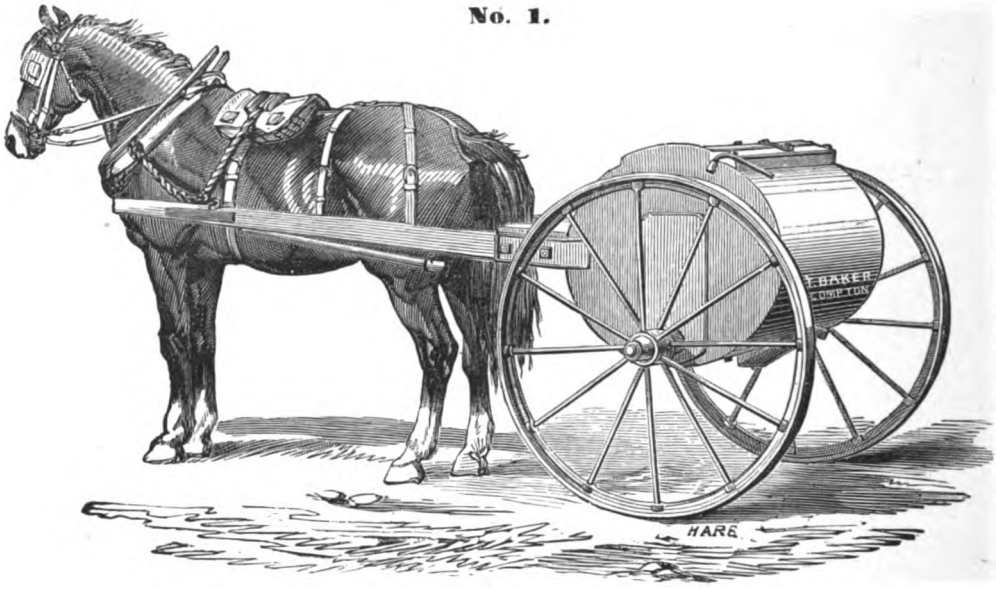
Tilt with Curtains at Front and Back, either Portable or Fixed.

No. 1.	Size	£ 5	0	0
No. 2.	Size	£ 6	0	0
No. 3.	Size	£ 7	0	0
No. 4.	Size	£ 8	0	0
	Double Shafts or Pole	£ 2	0	0
	Driver's Seat	£ 2	0	0
	Brake for application to both hind wheels	£ 2	10	0

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BAKER'S IRON WATER CARTS.

No. 1.



This Cart has an iron Body of Cylindrical Shape, and the Axle is placed under the centre or through the body, as preferred.

Two Stays can be attached behind to prevent the Cart tipping up when the horse is removed.

No. 6. Containing 180 Gallons, 4 inch wrought iron Wheels, with Cranked Axle when required	£18	0	0
No. 7. Containing 180 Gallons, 4 inch wrought iron Wheels	£17	10	0
Pump	£ 2	15	0
India Rubber Suction Hose, per foot...	£ 0	2	6

BAKER'S WATER CART,

For Traction Engines and Liquid Manure Drills.

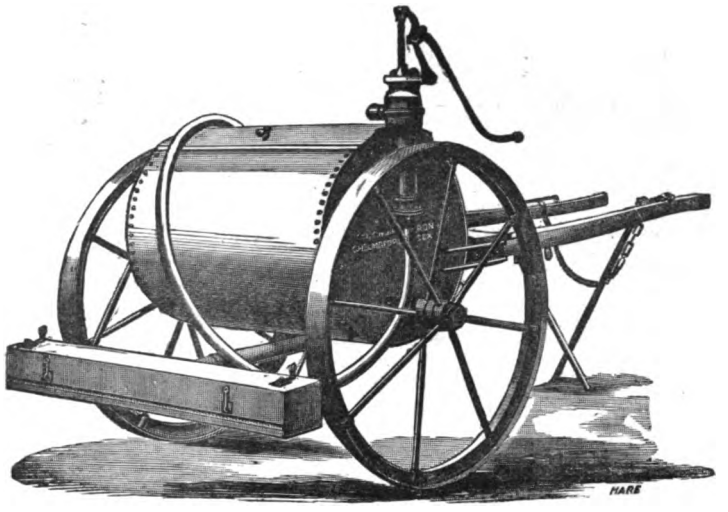
Mounted on strong cast iron Brackets to raise the Body of the Cart high enough to discharge into the tanks of Engines and Drills.

No. 11. Containing 180 Gallons, 3 inch Wood Wheels, mounted on Brackets	£18	5	0
No. 12. „ 180 „ 3½ inch „ „ „	£18	12	6
No. 13. „ 180 „ 4 inch „ „ „	£19	2	6
No. 14. „ 180 „ 4½ inch „ „ „	£19	12	6
No. 15. „ 180 „ 5 inch „ „ „	£20	2	6
No. 16. „ 150 „ 3 inch „ „ „	£17	2	6
No. 17. „ 150 „ 3½ inch „ „ „	£17	12	6
No. 18. „ 150 „ 4 inch „ „ „	£18	2	6
Pump with Brass Tail Piece...	£ 2	15	0

Suction Hose, per foot 2/6 to 3/6

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COLEMAN & MORTON'S WATER CART.



This Cart has a circular wrought iron Body with cast iron Ends, mounted on wrought iron Wheels. The Pump has gun metal Valves and Seatings.

Pony Cart, to hold 80 Gallons	£11 10 0
Portable Pump for ditto, 2½ inch bore	£ 2 5 0
Cart, to hold 100 Gallons	£13 0 0
„ „ 130 „	£14 0 0
Portable Pump for ditto, 3 inch bore	£ 2 15 0
Cart, to hold 150 Gallons	£15 0 0
„ „ 190 „	£16 0 0
Portable Pump for ditto, 4 inch bore	£ 3 15 0
India Rubber Suction Hose, per foot	2/6 to 3/-
Iron Spreader for Water	£ 2 0 0

COLEMAN & MORTON'S

STREET WATER CART.

This Cart is of similar construction to the above, holding 200 gallons.

Fitted with wrought iron Spreader, Driver's Seat, and strong Wood Wheels, price	£23 0 0
Pump ...extra	£ 3 15 0
India Rubber Hose, per foot	£ 0 3 0

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REEVES'

IRON WATER CART

(RICHARD'S PATENT) CENTRAL DELIVERY.

In this Cart the water is delivered from the centre of the Barrel instead of the bottom; the Body being caused to rotate, when the cart is being emptied, so as to bring the water from the bottom to the centre.

This arrangement lowers the centre of gravity by a distance equal to half the diameter of the Barrel, thus reducing the strain on the horse and the risk of capsizing.

To contain 175 Gallons, 3½ inch Wheels	£19 0 0
To contain 240 Gallons, 4 inch Wheels	£23 0 0
Pump and 16 feet of Suction Hose	£ 4 15 0
Extra for Wheels with 4½ inch Tires	£ 1 0 0

REEVES'

IRON WATER CARTS

(BOTTOM DELIVERY.)

The Bodies are wrought iron cylinders, mounted on the wood Shafts and carried by strong iron brackets attached to the Axle.

To contain 130 Gallons, 3 inch Wheels, Delivery 3 feet high	£15 0 0
To contain 175 Gallons, 3½ inch Wheels, Delivery 3 feet high	£17 0 0
To contain 240 Gallons, 4 inch Wheels, Delivery 3 feet high	£20 0 0
Pump and 16 feet of Suction Horse	£ 4 15 0

REEVES'

IRON WATER CARTS

(FOR STEAM CULTIVATION.)

These Carts are provided with extra strong Wheels and Back Stays.

To contain 130 Gallons, 3 inch Wheels, Delivery 4 feet 2 inches high	£16 0 0
To contain 175 Gallons, 3½ inch Wheels, Delivery 4 feet 2 inches high	£17 0 0
To contain 240 Gallons, 4 inch Wheels, Delivery 4 feet 2 inches high	£22 0 0
Pump and 16 feet of Suction Hose	£ 4 15 0

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LIPSCOMBE'S FILTERS

Remove Lead, Lime, and Sewage from Water, and are self-cleaning. They will purify River, Pond, Rain, or Spring Water in the most perfect manner.

Stoneware Filter for one person or a Dressing-Room	8/6 and 12/-
„ „ for Office or Nursery	12/- and 16/-
„ „ for a Family	16/-, 20/-, 25/-, 30/-, 35/-, 50/-, 80/- and 100/-
„ „ Cased for board Ship or Camp	9/6 to 80/-

Filters packed in Strong Hamper, extra 1/-

LIPSCOMBE'S CISTERN FILTERS.

These Filters are placed inside the ordinary House Cistern, so that the impure water passes upwards through the Filtering Media, consisting generally of Porous Stones and Powdered Charcoal, into the Pure Water Reservior, from which it may be drawn off cold by the Pure Water Tap, or supplied direct to the Boiler.

The Filter can readily be cleaned by withdrawing a plug from the upper part, so as to allow the water to rush through backwards, thoroughly expelling all impurities in its course.

One Filter to purify 250 Gallons per day	£ 6 0 0
Two Filters, connected together, to purify 500 Gallons per day	£11 0 0
Three Filters, connected together, to purify 750 Gallons per day	£16 0 0
Four Filters, connected together, to purify 1000 Gallons per day	£21 0 0

One Filter is generally sufficient to supply an ordinary household with drinking water and hot water from the boiler.

Other sizes for brewers and manufacturing purposes may be obtained at proportionate prices.

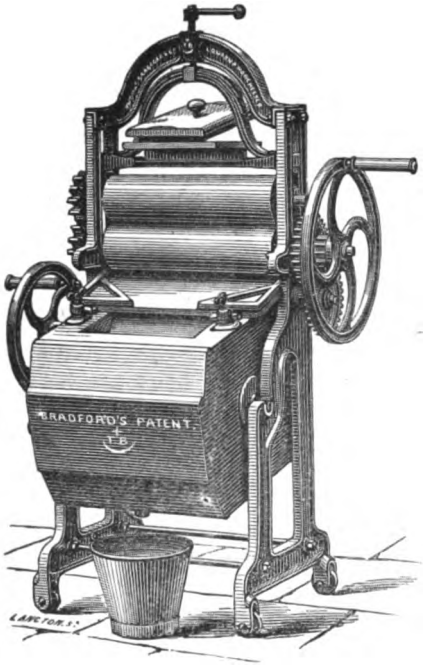
A Cistern Filter can be fixed in about three hours.

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BRADFORD'S

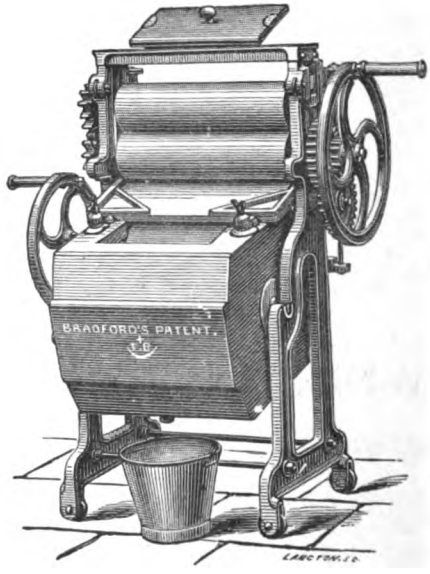
NEW PATENT "VOWEL" A1 WASHING, WRINGING, AND MANGLING MACHINES.

"Vowel" A1.



Top Pressure.

"Vowel" A1.



Back Pressure.

These combined Washing, Wringing, and Mangling Machines are most useful for families, ranking next to the Sewing Machine in domestic utility. They are strong, durable, occupying comparatively small space, and the working parts are very simple.

They require very little labour, and have no internal machinery that can injure the finest fabrics.

"Vowel" A1 Washing, Wringing, and Mangling Machine, with Top Pressure or Back Pressure	£ 6 10 0
"Vowel" AE, Family Machine, 27 inch Rollers	£ 7 15 0
"Vowel" E do. do. do.	£ 8 8 0
"Vowel" O, large Family Machine	£13 13 0
"Vowel" O2, with 30 inch Rollers (for Steam Power)	£16 16 0
"Vowel" W3, with 34 inch Rollers (for Steam Power)	£21 0 0

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BRADFORD'S IMPROVED WRINGERS.

These Wringers have best Vulcanized India Rubber Rollers and Patent Pressure Link, which relieves the Rollers of any undue strain.

"Acorn" A, small size, for Wringing and Starching Underclothing and Finery	£1	5	0
"Acorn" C, most useful and durable; will wring all Household Articles ...	£1	18	0
"Acorn" C2, ditto, extra large	£2	12	0
F2, with India Rubber Rollers 15 inches long, and Reversing Drip-board, very suitable for large Families, Hotels, &c....	£3	10	0
G2, with India Rubber Rollers 18 inches long	£4	10	0
H2, with India Rubber Rollers 21 inches long, fitted for Hand or Steam Power, with Fast and Loose Pulleys and Strap Guide complete, recommended for large public laundries, where Steam Power is employed	£10	10	0

BRADFORD'S

WRINGING AND MANGLING MACHINES.

No. 84, with Adjustable Compound Lever and Spring, 24 inch Rollers	£3	5	0
No. 85, ditto, ditto, with 27 inch Rollers and strong Brass Caps	£3	15	0

BRADFORD'S

IMPROVED PATENT WRINGING AND MANGLING MACHINES,

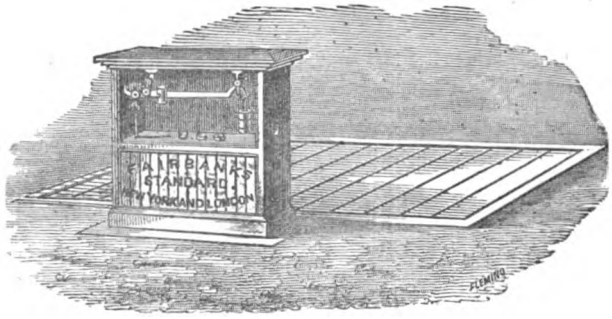
With Lever and Weight Pressure.

No. 0. 24 inch Rollers	£3	6	6
No. 1. 27 inch Rollers, with strong Brass Caps	£3	17	6
No. 2. 30 inch Rollers, do. do.	£4	17	6
No. 3. 34 inch Rollers, do. do.	£7	0	0

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FAIRBANK'S WEIGHING MACHINES

Are simple in construction, very sensitive and accurate, strong and durable;



and admit of various sizes of platform without difficulty.

Capacity. Tons.	Length of Levers.	Length of Connections.	Size of Platform.	Price.
10	16 feet	6 feet 4 inches	Length, 18 feet to 24 feet; Breadth, 9ft. 6in. to 11ft. 6in.	£65 0 0
10	15 feet	4 feet 6 inches	Can be built from 15 feet to 22 feet long, and 7 feet 3 inches to 8 feet 9 inches wide.	£62 0 0
8	15 feet	4 feet 6 inches		£56 0 0
6	15 feet	4 feet 6 inches		£52 0 0
10	12 feet	4 feet 6 inches	Can be built from 10 feet to 16 feet long, and 7 feet 9 inches to 9 feet 2 inches wide.	£56 0 0
8	12 feet	4 feet 6 inches		£52 0 0
6	12 feet	4 feet 6 inches		£47 0 0
5	12 feet	4 feet 6 inches		£42 0 0
4	12 feet	4 feet 6 inches		£37 0 0
3	11 feet	4 feet 6 inches	Length, 10 feet to 16 feet; Breadth, 7ft. 4in. to 9ft.	£33 0 0
2	10 feet	4 feet 0 inches	Length, 10 feet to 14 feet; Breadth, 6ft. 10in. to 7ft. 11in.	£27 0 0
10	6 feet 8 inches	2 feet 3 inches	Can be built from 6 feet to 9 feet long, and 4 feet 4 inches to 5 feet wide.	£50 0 0
6	6 feet 8 inches	2 feet 3 inches		£38 0 0
4	6 feet 8 inches	2 feet 3 inches		£32 0 0
3	6 feet 8 inches	2 feet 3 inches		£29 0 0
2	6 feet 8 inches	2 feet 3 inches		£25 0 0

The above prices are exclusive of the cost of timber and foundation, which is to be paid by the purchaser.

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COMPARATIVE WEIGHTS.

One English Ton	=	1016.0475	French Kilogrammes.
,, ,,	=	62.0257	Russian Poods.
,, ,,	=	20.3211	German Centners.
,, ,,	=	18.9519	Austrian Centners.
,, ,,	=	23.8874	Swedish Centners.
,, ,,	=	20.3211	Norwegian and Danish Centners.
,, ,,	=	22.4	United States Quintals.
,, ,,	=	22.8089	Egyptian Kantars.
,, ,,	=	22.0815	Spanish Quintaes.
,, ,,	=	1016.0475	Dutch Ponds.
,, ,,	=	1016.0475	Belgian Livres.
,, ,,	=	69.1654	Brazilian Arrobas.
,, ,,	=	27.2209	Bengalese Maunds.
,, ,,	=	16.5155	Batavian Peculs.
,, ,,	=	3628.	Japanese Kius.

COMPARATIVE LINEAL MEASURES.

One English Foot	=	.30479	French Metres.
,, ,,	=	1.	Russian Fuss.
,, ,,	=	.9711	Prussian Fuss.
,, ,,	=	.30479	German Stabs.
,, ,,	=	.9642	Austrian Fuss.
,, ,,	=	1.0658	Swedish Fots.
,, ,,	=	.30479	Belgian Aunes.
,, ,,	=	.30479	Dutch Els.
,, ,,	=	.1390	Brazilian Braças.
,, ,,	=	.6666	Bengalese Cubit.
,, ,,	=	1.	Japanese Shiaku.

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WHEELBARROWS.

Garden or General Purpose Wheelbarrows,

With Hard Wood Frames and Deal Linings, Painted, Complete.

No. 1. With Cast Iron Wheel	£1	7	6
No. 2. With Hooped Wood Wheel	£1	10	0
No. 3. With Wrought Iron Wheel	£1	12	6

Small Wheelbarrows for Youths.

No. 4. With Deal Frame and Lining, Ash Legs and Cast Wheel	£0	17	6
No. 5. With Deal Frame and Lining, Ash Legs and Hooped Wood Wheel ...	£1	2	6
No. 6. With Hard Wood Frame and Legs, Lined with Deal and Cast Wheel...	£1	0	0
No. 7. With Hard Wood Frame and Legs, Lined with Deal, and Hooped Wood Wheel	£1	5	0

Coal Barrows.

With Hard Wood Frame and Lined with best Red Deal, painted two coats red; with Wrought Iron or Hooped Wood Wheel 20 inches diameter ...	£1	12	0

Contractor's Wheelbarrows.

With Ash Frame, Lined with Elm, well stayed and bolted, and Cast Iron Wheel	£1	0	0

Stable Barrows.

With Hooped Wood Wheel, 22 inches diameter	£2	10	0
High Loose and Side Boards... ... ...extra	£0	7	6

Wrought Iron Wheelbarrows.

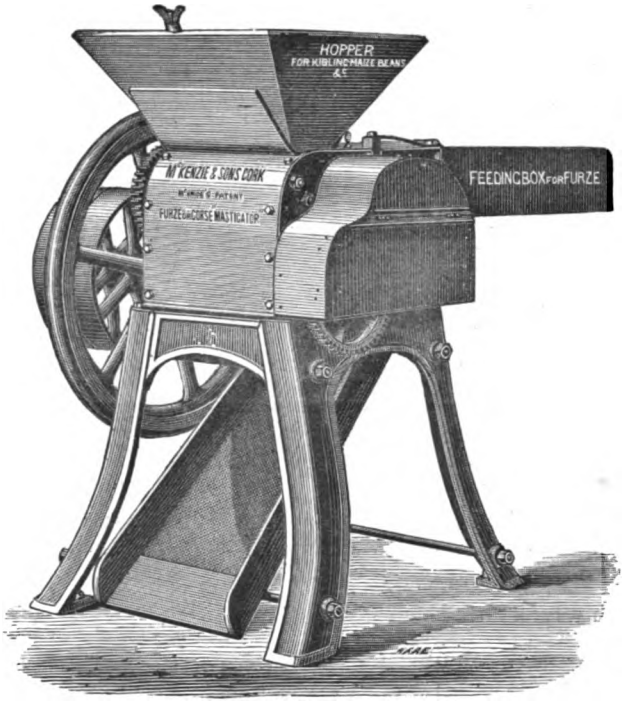
No. 1. Wrought Iron Wheelbarrow, with Wrought Iron Wheel					£1	12	6
No. 1.	Ditto	ditto	ditto	Galvanized, extra	£0	12	6
No. 2.	Ditto	ditto	ditto	not Galvanized...	£2	2	6
No. 2.	Ditto	ditto	ditto	Galvanized, extra	£0	15	0
Wide Wheel for Garden Walks ... ...extra					£0	5	0

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MACKENZIE'S GORSE MASTICATOR.

Gorse or Furze is an economical and nutritious green food for horses and cattle and an efficient substitute for hay. It is an excellent milk producer when mixed with other food.

The Furze is cut up into short lengths by Revolving Knives, and is then passed between a pair of



Masticating Rolls which effectually reduce it to a soft and pulpy condition, destroying all the prickles.

The following comparative qualities of various foods are extracted from Tables compiled by Mr. Lawes and Professor Voelcker.

Articles of Food.	Flesh Formers.	Fat Formers.
Furze or Gorse.. ...	3 21 per cent.	9.38 per cent.
Carrots	0.60 per cent.	10.18 per cent.
Clover Hay	4.27 per cent.	9.14 per cent.
Cabbage	1.63 per cent.	5.06 per cent.
Kohl-Rabi	2.75 per cent.	8.62 per cent.
Mangolds	1.54 per cent.	8.60 per cent.
Sweeds	1.94 per cent.	5.93 per cent.
Turnips (Common) ...	1.80 per cent.	4.43 per cent.

No. 1. For Hand or Horse Power £10 10 0
No. 2. For One Horse Power £12 12 0
No. 3. For Two or Three Horse Power £15 15 0
No. 4. For Four Horse Power £20 0 0

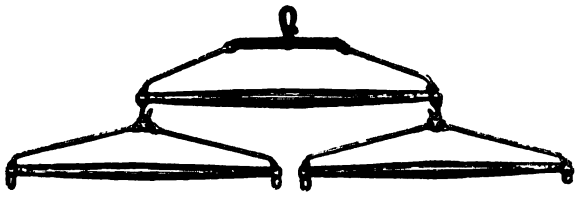
The Price includes one Pulley with each Machine.

By the addition of a suitable Hopper as shewn in the engraving the Masticator will also split Beans, Maize, Peas, &c., with ease and rapidity. Price 20/- extra.

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E. PAGE & Co.'s

IMPROVED PAIR-HORSE WOOD WHIPPLETREES.

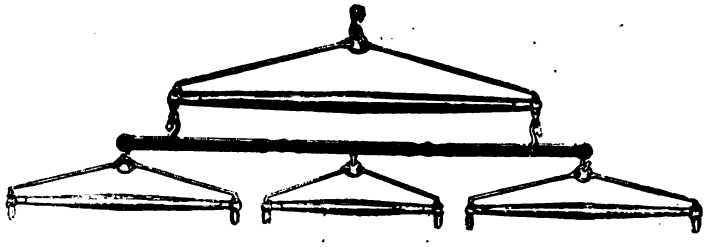


The above Engraving illustrates a set of Pair-horse Whippletrees with Wood Stretchers, the hinder one being fitted with a Hake, so that the set can be used with two or three horses abreast, and the draught can be regulated according to the strength of the horses when working in pairs. None but well-seasoned wood is used in their construction, and for their lightness, strength, and simplicity they are highly recommended.

Price... ... ... **£0 11 6**

E. PAGE & Co.'s

IMPROVED THREE-HORSE EQUALIZING WHIPPLETREES.



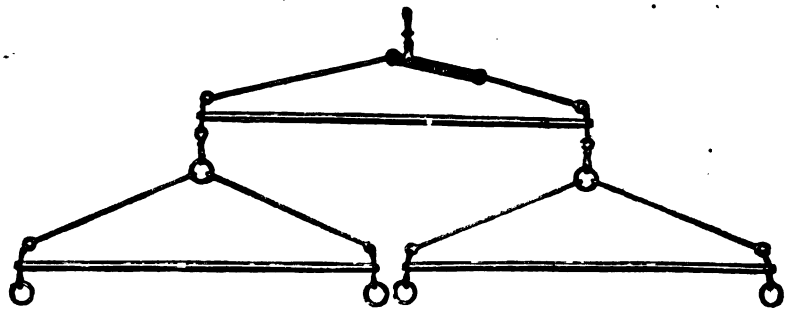
These have Wood Stretchers, and are suited for three horses drawing abreast. The jointed Bar, on which the three small Whippletrees are fixed, secures an equal draught for each horse.

Price, for three Horses **£1 6 0**

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E. PAGE & Co.'s

IMPROVED WROUGHT IRON PAIR-HORSE TUBULAR WHIPPLETREES.

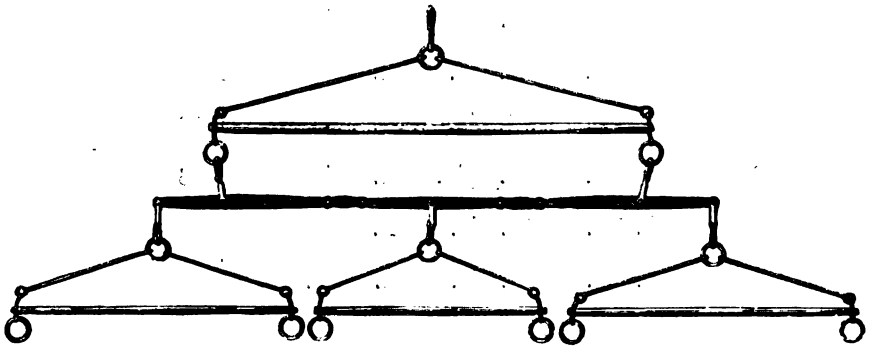


These Whippletrees are constructed on the same principle as the foregoing, but have tubular wrought iron Stretchers instead of wood. For strength and durability they are confidently recommended.

Price... ... ... £0 17 0

E. PAGE & Co.'s

IMPROVED THREE-HORSE TUBULAR WHIPPLETREES.



These are on the same principle as the other three-horse Whippletrees, but being fitted with iron Stretchers instead of wood, they are much more durable and of greater strength.

Price, for three horses £2 0 0

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SINGLE WROUGHT IRON WINE BINS,

TO FASTEN TO A WALL.

To hold.	In a Row.	Width.	Height.	Depth.	Price, Painted.	Price, Galvanized.
3 dozen	4	1ft. 7in.	3ft. 5in.	1ft. 0in.	£0 7 6	£0 10 6
6 dozen	6	2ft. 2in.	4ft. 2in.	1ft. 0in.	£0 15 0	£0 19 0
9 dozen	6	2ft. 2in.	6ft. 3in.	1ft. 0in.	£1 2 6	£1 10 0
12 dozen	12	4ft. 5in.	4ft. 2in.	1ft. 0in.	£1 4 0	£1 12 0
15 dozen	12	4ft. 5in.	5ft. 3in.	1ft. 0in.	£1 10 0	£2 0 0
18 dozen	12	4ft. 5in.	6ft. 3in.	1ft. 0in.	£1 16 0	£2 8 0

If with Doors, Padlock, &c., covered Sides and Top, 2/9 per dozen bottles extra to above prices.

DOUBLE WROUGHT IRON WINE BINS,

To stand alone or to fasten to a wall.

To hold.	In a Row.	Width.	Height.	Depth.	Price, Painted.	Price, Galvanized.
6 dozen	4	1ft. 7in.	3ft. 5in.	1ft. 6½in.	£0 15 0	£1 0 0
12 dozen	6	2ft. 2in.	4ft. 2in.	1ft. 6½in.	£1 4 0	£1 10 0
18 dozen	6	2ft. 2in.	6ft. 3in.	1ft. 6½in.	£1 16 0	£2 7 6
18 dozen	12	4ft. 5in.	3ft. 1½in.	1ft. 6½in.	£1 16 0	£2 7 6
24 dozen	12	4ft. 5in.	4ft. 2in.	1ft. 6½in.	£2 2 0	£2 13 0
30 dozen	12	4ft. 5in.	5ft. 3in.	1ft. 6½in.	£2 10 0	£3 5 0

If with Doors, covered Sides and Tops, 2/9 per dozen bottles extra to above prices.

Odd sizes, Painted ... ... 2/6 per dozen bottles.
Odd sizes, Galvanized ... ... 3/6 per dozen bottles.

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WIRE FENCING.

Strained Wire Sheep Fence.

3 feet 6 inches high, with five Wires, the two upper ones $\frac{1}{4}$ inch diameter, and the remainder $\frac{9}{16}$ inch diameter; wrought iron Standards 8 feet apart, $1\frac{1}{4}$ by $\frac{5}{16}$ inch, with alternate double-pronged and anchor feet. Straining Pillars 100 yards apart.

Price, with five lines of solid Annealed Wire						per yard	£0	1	1
Ditto	ditto	Galvanized Strand Wire	...	...	...	...	„	£0	1	4

3d. per yard extra for fixing; the owner finding two assistant labourers.

Strained Wire Fence for Oxen and Horses.

4 feet high, with six lines of Wire, the top one being about $\frac{9}{32}$ inch diameter, and the other five being $\frac{1}{4}$ inch diameter. Standards of $1\frac{1}{4}$ by $\frac{3}{8}$ inch iron, 8 feet apart. Straining Pillars 100 yards apart.

Price, with six lines of solid Annealed Wire						per yard	£0	1	3
Ditto	ditto	Galvanized Strand Wire	...	...	...	...	„	£0	1	7

3½d. per yard extra for fixing; the owner finding two assistant labourers.

Strained Wire Fence for Oxen and Horses.

4 feet 6 inches high, with seven lines of wire; Standards of $1\frac{1}{2}$ by $\frac{3}{8}$ inch iron, 8 feet apart. Straining Pillars 100 yards apart.

Price, with seven lines of solid Annealed Wire...						per yard	£0	1	6
Ditto	ditto	Galvanized Strand Wire	...	...	...	...	„	£0	2	0

4d. per yard extra for fixing; the owner finding two assistant labourers.

Side Stays, for curves or uneven ground, extra...						each	£0	3	0

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WIRE FENCING.

Strained Wire Deer Fence, Game-Proof and Unclimbable.

Six feet high, with ten lines of Horizontal Wires, the two upper ones $\frac{1}{4}$ inch diameter, and the lower ones $\frac{3}{16}$ inch diameter.

The Vertical Wires $\frac{5}{3\frac{1}{2}}$ inch diameter are laced $1\frac{1}{4}$ inches apart on the Horizontal Wires.

Standards $1\frac{1}{2}$ inches by $\frac{3}{8}$ inch, 9 feet apart, with anchor formed and double-pronged feet alternately, 18 inches below ground; Octagonal cast iron Straing Pillars 100 yards apart.

Price ... ...per yard £0 7 6

Fixing 1/3 per yard extra; the owner providing two assistant labourers.

Strained Wire Deer Fence.

Six feet high, with twelve lines of Wire, the six upper ones $\frac{1}{4}$ inch diameter, and the six lower ones $\frac{3}{16}$ inch diameter.

Standards $1\frac{1}{2}$ by $\frac{3}{8}$ inch, 6 feet high are placed 9 feet apart, with Intermediate Standards $1\frac{1}{4}$ by $\frac{3}{8}$ inch diameter, 2 feet 3 inches high to take five Wires; the Deer are thus prevented from creeping through the fence.

Octagonal Straining Pillars of cast iron with Ornamental Cap are placed 100 yards apart.

Price .. .. per yard £0 2 9

Fixing 6d. per yard extra; the owner providing two assistant labourers.

Strained Wire Ox Fence, Game Proof.

With Vertical Wires $1\frac{1}{4}$ inches apart, $\frac{5}{3\frac{1}{2}}$ inch diameter pointed at the top, and laced to the Horizontal Wires to a height of 2 feet 6 inches.

Price ... ... per yard £0 3 6

Fixing 1/- per yard extra; the owner providing the Stone Blocks and two labourers.

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WIRE FENCING.

Strained Wire Fence for Sheep.

3 feet 6 inches high, with five lines of Galvanized Strand Wire, the top one ¼ inch diameter, the others $\frac{3}{16}$ inch diameter. Self-fixing Standards, 9 feet apart, of | section, with rounded edges. Self-fixing Straining Pillars 100 yards apart.

Price ... ... per yard £0 1 1

Fixing, 3d. per yard extra; the owner providing two assistant labourers.

Strained Wire Fence for Oxen and Horses.

4 feet high, with six lines of Galvanized Strand Wire, the top one $\frac{5}{16}$ inch diameter, and the others ¼ inch diameter. Standards, 9 feet apart, of | section with rounded edges, and Self-fixing Straining Pillars 100 yards apart.

Price ... ... per yard £0 1 4

Fixing, 4d. per yard extra; the owner providing two assistant labourers.

Extra strong Strained Wire Fence for Heavy Cattle.

4 feet 6 inches high, with seven lines of Galvanized Strand Wire, the top one $\frac{5}{16}$ inches diameter, and the others ¼ inch diameter. Standards, 9 feet apart, of | section, with rounded edges, and Self-fixing Straining Pillars 100 yards apart.

Price ... ... per yard £0 1 7

Fixing, 4½d. per yard extra; the owner providing two assistant labourers.

Strained Wire Fence for top of Stone Walls or sunk Fences.

2 feet 6 inches high, with four lines of Wire, top $\frac{3}{16}$ inch diameter, others $\frac{5}{32}$ inch diameter. Standards 1¼ by ¼ inch, 9 feet apart, Straining Pillars 1¼ inches square, 100 yards apart.

Price ... ... per yard £0 0 5

2 feet high, with three lines of Wire; and Standards 1 by ¼ inch, 9 feet apart. Straining Pillars 1¼ inches square, 100 yards apart.

Price .. .. per yard £0 0 4

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